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Catalogue

1904-1905

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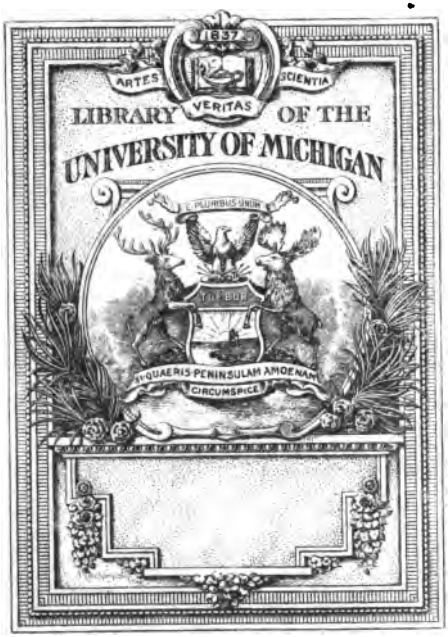

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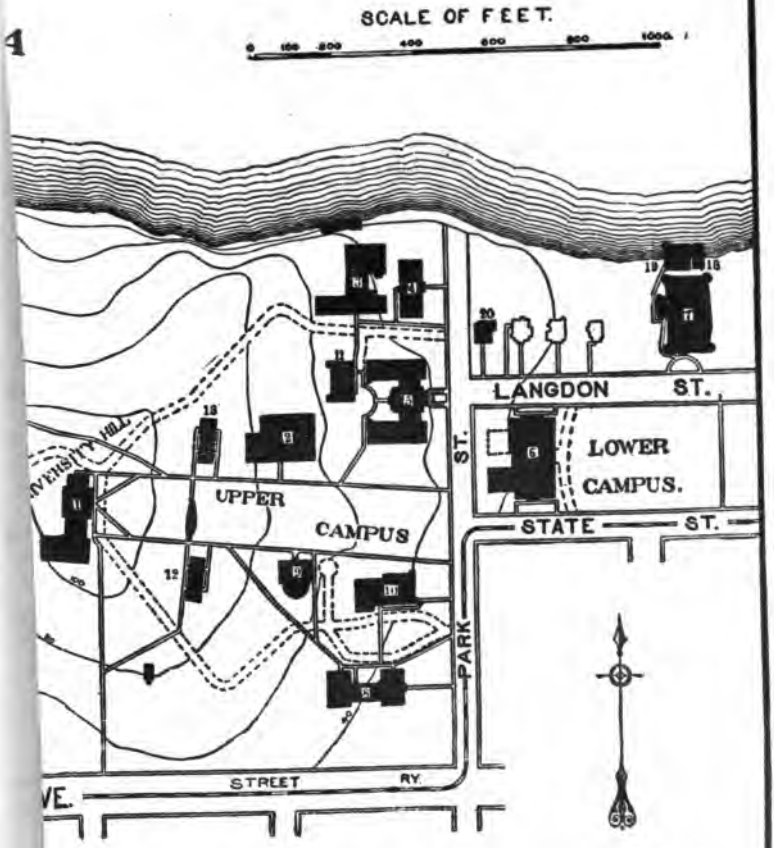

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THE

UNIVERSITY OF WISCONSIN

CATALOGUE

1904-1905

MADISON
Published by the University
1905

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THE POST
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CALENDAR.

1905.

Jan. 4,	Exercises resumed after the Christmas recess.
Feb. 6-15,	Final examinations, first semester.
Feb. 16-17,	Registration days, second semester.
Feb. 20,	Lectures and recitations begin.
Feb. 22,	Washington's Birthday: legal holiday.
April 20-24,	Easter recess.
May 30,	Decoration Day: legal holiday.
June 10-16,	Final examinations, second semester.
June 15-16,	Examinations for admission to the University.

Commencement Week.

June 18,	Baccalaureate Address.
June 19,	Address before the Graduating Class of the College of Law.
June 20,	Class Day Exercises.
June 21,	Alumni Day.
June 22,	Commencement Day.

June 23,	Summer vacation begins.
June 26,	Summer Session begins.
Aug. 4,	Summer Session closes.

THE ACADEMIC YEAR 1905-06.

1905.

Sept. 25-27,	Registration days.
Sept. 25-27,	Examinations for admission to advanced standing in the College of Law.
Sept. 26-27,	Examinations for admission to the University.
Sept. 28,	Lectures and recitations begin.
Nov. 30,	Thanksgiving Day: legal holiday.
Dec. 23,	Christmas recess begins.

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1906.

Jan. 3,	Exercises resumed after the Christmas recess.
Feb. 5-14,	Final examinations, first semester.
Feb. 15-16,	Registration days, second semester.
Feb. 19,	Lectures and recitations begin.
Feb. 22,	Washington's Birthday: legal holiday.
April 12-16,	Easter recess.
May 30,	Decoration day: legal holiday.
June 9-15,	Final examinations, second semester.
June 14-15,	Examinations for admission to the University.
June 17-21,	Commencement Week.

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1904-1905.

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State at Large, DR. F. W. A. NOTZ, Watertown.
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JONES, BURR W., A. M., LL. B., Professor of Law. *L. B.* 112 Langdon.

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INTRODUCTION.

HISTORICAL SKETCH.

The University of Wisconsin was founded in the pioneer days of the State. In the first year of the existence of the territory (1836), an act was passed for the establishment of "Wisconsin University" at Belmont; but, except for the naming of trustees, the project was never carried out. In 1837, another act to establish the "Wisconsin University of Green Bay" eventuated in the formation of a temporary local college called Hobart University It was in 1838 that the University of the Territory of Wisconsin was provided for by law, and endowed by the act of Congress in the same year, with the customary grant of two townships of land. Its governing body, a Board of Visitors, alone evidenced the existence of this institution.

In 1848, section 6 of the constitution of the new state declared that "Provision shall be made by law for the establishment of a state university, at or near the seat of the state government, and for connecting with the same from time to time such colleges in different parts of the state as the interests of education may require." The land grants of the United States for the support of the University were made a perpetual fund for its support, and it was provided that no sectarian instruction should be allowed in the institution. The University was incorporated by the act of July 26, 1848, and a board of regents, to be chosen by the legislature, was made its governing body. At the first meeting of this board, October 7, 1848, a preparatory department was established, to open in February, 1849, under the charge of John W. Sterling, a graduate of the University of New Jersey (Princeton). The site for the University, on "College Hill," was selected, and John H. Lathrop, a graduate, and afterwards a tutor, of Yale College, was called from the presidency of the University of Missouri to become Chancellor. He was formally inaugurated January 16, 1850. North Hall, the first building, was constructed in the same year,

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and opened September 17, 1851. The first class, consisting of Levi Booth and Charles T. Wakeley, graduated on July 26, 1854. At this time the faculty consisted of Chancellor Lathrop, occupying the chair of ethics, civil polity, and political economy, Professor Sterling, who taught mathematics, natural philosophy, and astronomy, Obadiah M. Conover, professor of ancient languages and literature, and Stephen H. Carpenter, tutor. The attendance was forty-one, exclusive of fifteen students in the preparatory course. Under Chancellor Lathrop, the group of buildings was increased by South Hall, completed in 1855, and University Hall, completed in 1859. Congress granted Wisconsin in 1854 a second two townships of land for the University, but this, as well as the first grant, was sacrificed at low prices to attract immigration. Thus the income from the University fund was very small. Moreover, the State required the regents to construct their buildings by loans drawn from the same land fund instead of providing them by state bounty. Until 1870, the University struggled along on the meager income furnished by the lands donated by the federal government. The State made its higher education subordinate to the demand of its citizens for cheap lands.

The University in these years was criticised because of its preparatory department, and because of the alleged narrowness of the curriculum. It was demanded that "a more distinct bias should be given to its instructions in the direction of the several arts and avocations as they exist among men." In 1858, as the outcome of these demands, the preparatory department was restricted in its scope, and the University was reorganized into a department of science, literature, and the arts, consisting of six schools: philosophy, philology, natural science, civil and mechanical engineering, agriculture, and polity.

Chancellor Lathrop was succeeded in 1859 by Henry Barnard, a graduate of Yale, prominent in the reorganization of the schools of Connecticut and Rhode Island, founder of the *American Journal of Education*, and (1867) first national Commissioner of Education. His policy centered in elevating the public school system of the state as a basis for university growth, but ill health caused his resignation in 1860.

Under the *ad interim* direction of Professor Sterling, the University remained without a chancellor until 1867. The Civil War took a large proportion of the students into the field, and no commencement was held in 1864, all but one of the senior class having joined the army.

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The close of the war brought a new inspiration and growth to the University. The returning soldiers took up their studies, and by 1870 the University had nearly 500 students. A reorganization was effected in 1866, and Dr. Paul A. Chadbourne, a graduate of Williams College, was called to the presidency. Among the important developments of this period was the founding of the College of Law, the maturing of plans providing for co-education, and the institution of the agricultural department as an integral part of the University. This constituted a radical departure from the policy of the other states of the middle west. In many instances agricultural and engineering colleges have been founded apart from the state university. The rapid growth of the University of Wisconsin and its hold upon the people have been in a considerable measure due to the fact that it contains within its organization the colleges which appeal to the farmer and artisan as well as to the business and professional classes of the state.

It was through the efforts of President Chadbourne that an appropriation of $50,000 was secured from the legislature of 1870 for the erection of a separate building for the women students of the University. This building, now known as Chadbourne Hall, was constructed during the following year, when Professor Sterling as Vice-President administered the University, and was occupied in the fall of 1871.

President Twombly came to the University at the beginning of the academic year 1871-72. He was a graduate of Wesleyan University at Middletown, Connecticut, one of the overseers of Harvard College, and a founder of Boston University.

The reorganization of 1866 had provided for co-education, but for some years the work of the women was kept separate from that of the men. It was significant, however, of an increasing recognition of the importance of the education of women that the first appropriation which the legislature ever made to the University was for the women's building, and only a few years elapsed when complete co-education was adopted. Perhaps the most important development of the period of Dr. Twombly's presidency was the provision made by the legislature for a state tax of $10,000 a year to form a part of the University income. In thus adopting the policy of a special annual tax for the support of the University, the legislature made the formal explanation in the preamble to the law, that the policy of disposing of the land grants by congress at a low price, in order to attract

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actual settlers, had prevented the increase of the productive funds, and that it was the duty of the State to see to it that the University should not suffer. A system of free tuition to the graduates of the high schools of the State who passed the University entrance requirements, was also adopted at this time. This step was the beginning of the elimination of the preparatory department of the University. By resting its growth upon the high schools of the State, and receiving an annual income from the taxpayers, the University merged itself completely with the educational life of the State, and, in the long run, felt the benefits of this change.

With the coming of President Bascom from Williams College, in 1874, the University entered upon a new life. The finances of the institution were put on a better basis by the grant of the legislature of a tenth of a mill tax, which afforded increasing revenue as the wealth of the State increased. Large specific grants for new buildings, including Assembly Hall, Science Hall, the Chemical Building, and the Machine Shop, were made in the same period. The Farmers' Institutes and the Short Course in Agriculture brought the University into closer touch with the farmers of the State. Under Dr. Bascom's presidency the preparatory department was abolished, and the University found all the students it could care for among the graduates of the high schools. At the beginning of his presidency the attendance, excluding the preparatory department, was about 300. At its close, thirteen years later, it was but 500; but the University had thoroughly gained the respect of the State.

President Bascom was succeeded by President Chamberlin of the United States Geological Survey, a graduate of Beloit College. He gave the University a strong impulse toward graduate study by the emphasis which he laid on research. Courses of study were increased, the standards of admission raised, and fellowships provided for graduate study. When he resigned, after five years of service, in 1892, the University had doubled its numbers, rising from 500 to 1,000. During his presidency, a new science building was completed, and buildings were erected for the dairy school and the College of Law. In addition, a University boat house was built, and the contracts let for the Armory and Gymnasium, now such a prominent feature of the Lower Campus.

President Adams came to Wisconsin from Cornell, whose presidency he had just resigned. Under his administration the

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University rose from 1,000 students in 1892 to 2,600 in 1901. The beautiful building for the library of the State Historical Society and the University, costing nearly three quarters of a million of dollars, and housing treasures of inestimable value, is the most impressive monument of his presidency. The University developed into a larger life in all directions during these ten years. Particularly the great increase in the number of graduate students and the emphasis upon graduate teaching should be noted. At the close of his presidency there were over one hundred graduate students, while ten years before there were only twenty-two. Athletics had reached their largest development in the same period, and Camp Randall, an athletic field of forty-two acres, was purchased for the University. The University began its summer sessions in 1899, a development which has been very important in increasing the influence of the University.

During the absence of Dr. Adams, caused by illness, and after his resignation, Professor Birge, Dean of the College of Letters and Science, served as Acting President during the three academic years, 1900-1903.

President Charles R. Van Hise, the first alumnus of the University to hold the presidency, was elected in the spring of 1903, and assumed the active duties of the position at the beginning of the succeeding academic year.

THE SUPPORT OF THE UNIVERSITY.

The University is supported partly by the income of federal grants, partly by taxation of the people of the State, and partly by private gifts. There have been five federal grants, namely: the Two-Township Grant of 1848; the Supplementary Two-Township Grant of 1854; the Morrill Grant of 1862 for the support of studies pertaining to agricultural and mechanic arts; the Hatch Grant of 1887 for the support of agricultural experiment stations, and the Supplementary Morrill Grant of 1890.

Besides numerous and large appropriations for buildings and other specific purposes, the State of Wisconsin has made eight continuing grants, namely: the one-tenth mill tax of 1876, increased to one-eighth mill in 1883; the additional one-tenth mill tax of 1891; the appropriation for the support of the Observatory in 1887; the appropriation for the support of Farmers' Institutes in 1885, increased in 1887; the appropriation for the College of Engineering, in 1889, of one per cent. of the railroad license tax;

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and the additional one-fifth mill grant of 1897. The legislature of 1899 consolidated the various mill taxes, specified above, and the grant of one per cent. of the railroad licenses, into a specific continuous annual grant of an amount equal to the annual revenue from these various grants. This appropriation was increased by the legislature of 1901, and again by the legislature of 1903.

Of the gifts that have come to the University, that of Dane County for the purchase of lands for the University farm, that of the late Governor C. C. Washburn for the founding of the Washburn Observatory, and that of the late Judge Mortimer M. Jackson for the establishment of the Mortimer M. Jackson Professorship of Law, have been the most considerable and important.

THE UNIVERSITY AND THE STATE.

The University of Wisconsin is the culmination of the free educational system of the State. In the educational policy of the State, the University sustains a similar relation to the high schools that the high schools sustain to the primary and grammar schools. As those who have passed through the grammar grades may freely avail themselves of the high schools, so those who have completed with credit a full high school course may advance to the opportunities offered by the University. It is not expected that all pupils who complete the grammar grades will advance to the high school; nor is it expected that all who complete a high school course shall go forward to the University. But the school system of the State has been so arranged as to make the passage from one grade to another as easy and natural as possible, in order to afford every encouragement to higher education. The State through the University undertakes to furnish instruction in the various branches requisite for a liberal education, in the technical branches of engineering, law, agriculture, pharmacy, commerce, home economics, and music. It also aims to encourage research work in all departments, to produce creative scholars, and thus do its part in the enlargement of the domain of knowledge. Thus it is the general policy of the institution to foster the higher educational interests of the State, broadly and generously interpreted. By prescribing a large number of studies during the first two years of undergraduate work, and by leaving all, or a large part, of the work of the last two years to the free selection of the student, under a definite system, the University endeavors to give a wise measure of direction, leaving at the same

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time sufficient room for choice to encourage individual adaptation and special development. The graduate work is, of course, wholly elective.

GOVERNMENT

The government of the institution rests upon the inherent obligations of students to the University and to the State. The University is maintained at the public expense for the public good. Those who participate in its benefits are expected, as a matter of honor, not only to fulfill the obligations of loyal members of the institution, of the community, and of the commonwealth, but actively to aid in promoting intellectual and moral interests. Every student owes to the public, in the form of superior usefulness to it, both while in the institution and afterwards, a full equivalent for its expenditure in his behalf.

Under the regulations of the University a student convicted in court of a crime or misdemeanor is suspended, until further action is taken by the University.

The University avoids all that is sectarian or partisan; but it endeavors to extend its sympathy and influence to whatever contributes to good citizenship and high character.

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ORGANIZATION.

The University embraces—

- The College of Letters and Science.
- The College of Engineering.
- The College of Law.
- The College of Agriculture.
- The Graduate School.

The College of Letters and Science embraces—

- General Courses in Liberal Arts.
- Special Courses, which include:
  - Commerce.
  - Pre-medical Studies.
  - Pharmacy.
  - Music.
  - Home Economics.

The College of Mechanics and Engineering embraces—

- The Civil Engineering Course.
- The Sanitary Engineering Course.
- The Mechanical Engineering Course.
- The Electrical Engineering Course.
- The Applied Electrochemistry Course.
- The General Engineering Course.
- The Mining Engineering Group of Electives.

The College of Agriculture embraces—

- The Experiment Station.
- The Long Course in Agriculture.
- The Short Course in Agriculture.
- The Dairy Course.
- The Farmers' Institutes.

The College of Law embraces—

- A Three Years' Course.

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EQUIPMENT.

GROUNDS AND BUILDINGS.

The University of Wisconsin is picturesquely situated at Madison, the capital of the State. The University grounds comprise 450 acres, and extend for more than a mile along the south shore of Lake Mendota, a sheet of water about four miles in width and six miles in length. In the eastern part of the grounds the land rises abruptly from the lake into two summits, of which the eastern and higher, University Hill, reaches a height of about one hundred feet above the lake. The larger number of the college buildings are placed on the summit and eastern slope of this hill. The western part of the grounds is lower and more nearly level, and is occupied by the Experimental Farm, belonging to the College of Agriculture. East of the University Hill is the Lower Campus, on the west end of which stands the State Historical Society Library Building for the libraries of the State Historical Society and the University. (For an account of this building, see Libraries, page 37.) The rest of the Lower Campus is used for athletic sports and as the drill ground for the military department. At the session of 1893 the legislature provided for the purchase of Camp Randall for an athletic field. This is a tract of ground including forty-two acres, adjoining the University grounds to the southwest. In 1898 one hundred and sixty acres were purchased for a special experimental farm for the College of Agriculture, to which, in 1903, sixty acres were added.

The buildings of the University that are used for instructional purposes are fifteen in number. The oldest three—North Hall, South Hall, and University Hall—stand on and near the eastern summit of University Hill. North Hall was erected in 1850-51, and was opened for instructional purposes on September 17, 1851. It is now occupied by the departments of German and Pharmacy. South Hall was erected in 1855. It contains the office of the Dean of the College of Letters and Science; offices, lecture rooms, and laboratories for the departments of Bacteriology, Home Economics, Hebrew and Hellenistic Greek, and for the Course in Commerce; the Hygienic laboratory; and the offices of the Wisconsin

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Geological and Natural History Survey. University Hall, the construction of which was authorized by the legislature in 1857, was completed in 1859; it has since been materially changed; a new portico, a new dome, and a large south wing were added in 1897-99. This building contains the lecture and recitation rooms for most of the departments of language and literature, mathematics, history, and philosophy. On the first floor of the new wing are the offices of the President and the Registrar. These buildings as originally erected were paid for out of the money derived from the sale of lands granted by the national government.

Across the east front of the Campus, at the foot of University Hill, is a row of buildings, erected at the expense of the State of Wisconsin. At the south is Chadbourne Hall, the dormitory for young women; it was built in 1870 and remodeled and enlarged in 1896 (see p. 85). Next stands Assembly Hall, completed in 1879; the rear part, occupied by the University Library until the summer of 1900, has been remodeled for the School of Music. Still farther north is Science Hall, the largest and most costly of the University buildings, completed in 1887, containing the lecture rooms, laboratories, and museums of the departments of Physics, Geology, and Biology (including Anatomy), and also the laboratory of Psychology. Next to Lake Mendota is the Chemical Laboratory, built in 1885; to the rear of this is the Machine Shop, erected in the same year, and much enlarged in 1894. Near this building is the central heating plant, built in 1885, and enlarged in 1894. To the west of Science Hall, on the north side of the Campus, is the Engineering Building, erected in 1900. Opposite this, on the south side of the Campus, is the Law Building, erected in 1893, which, in addition to the library, lecture rooms, and offices of the College of Law, contains the offices of the Regents.

Southwest of University Hall, on the level tract of land fronting on University Avenue, the new Chemical Building is in process of construction. It was begun in 1904, and will be available for instructional purposes in the fall of 1905. The central part of the building is 80 by 188 feet, with two wings, each 51 by 61 feet, all three stories in height. The 80-foot front is of Bedford stone; the rest of the exterior is of sand-lime brick, which matches the stone front in color, giving the effect of a solid stone building. When the building is complete, with future additions as planned, the whole exterior will be of Bedford stone. The light-colored brick will then face the light-courts. The building contains an

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auditorium seating five hundred persons, four smaller lecture and seminary rooms, and a library. Besides these there are large laboratories for organic, inorganic, analytical, physical, and pharmaceutical chemistry, with special laboratories for advanced work in each of these branches. The equipment of the building will be modern and complete throughout, affording the best of facilities for work in all departments.

Directly west of University Hill is Observatory Hill, upon which stands the Washburn Observatory, erected in 1878 through the munificence of the late Gov. C. C. Washburn. Near it are the Students' Observatory and the residence of the Director. On the western slope of Observatory Hill are the Hiram Smith Hall (for the Dairy School), constructed in 1891, the Horticultural-Physics Building, begun in 1893 and completed in 1896, and the new Central Agricultural College building, first occupied in 1904, a description of which may be found in that part of this catalogue devoted to the College of Agriculture. Further west lie the barns and buildings of the Experimental Farm and the residence for the Dean of the College of Agriculture.

Between the Lower Campus and the lake stands the Armory and Gymnasium, authorized by the legislature of 1891, and between this and the lake is the University Boat House.

LIBRARIES.

The libraries at Madison, all of which are at the service of members of the University, are five in number, viz., the Library of the University of Wisconsin, the Library of the State Horticultural Society of Wisconsin, the Library of the Wisconsin Academy of Sciences, Arts, and Letters, the State Law Library, and the Madison Free Public Library. These libraries duplicate books only to supply exceptional demands, and have an effective strength approximately equal to the total number of volumes possessed by them. The total number of bound volumes in all the libraries is about 290,000, and the number of pamphlets exceeds 155,000.

The first three libraries above named are all housed in the new library building of the State Historical Society on the Lower Campus of the University. This building, erected by the State of Wisconsin at a cost of $620,000, was occupied in the fall of 1900, and affords exceptional facilities in the way of convenient and commodious quarters to University students. In the planning of the building, the special needs of the University were consulted.

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In the south half of the first floor are located four department libraries of the Historical Society, viz., documents, newspaper files, patents, and maps and manuscripts. In the north end of this floor is a series of six fine seminary rooms, allotted to American history, European history, economics, political science, and mathematics. The greater part of the second or main floor is occupied by the general reading room and the periodical room, which are used in common by the two libraries. In these two reading rooms 275 readers may find ample accommodation at one time. In open cases in the reading room are shelved several thousand reference and "reserved" books. To these, as well as to the large collection of general and engineering periodicals in the adjoining periodical room, all readers have direct access. The main portion of both libraries is stored in the stack wing adjoining the delivery room on the west. Officers of the University have direct access to the shelves in all parts of the library, and students engaged in advanced work, upon recommendation of their instructors, are allowed access to those parts of the collection dealing with their special subjects.

The administrative rooms of the Historical Society and of the University library are situated at the south and north ends of the second floor respectively. The north end of the third floor is occupied by six seminary rooms, for the departments of German, Latin, Greek, French, English, and philosophy and education. In these rooms, as in those on the first floor, University seminaries are conducted. The south end of the third floor contains a small lecture hall, a room set apart for the Wisconsin Academy of Sciences, Arts, and Letters, and two small administrative rooms. The museum and gallery of the Historical Society occupy the fourth floor. At no university in the country is to be found a more convenient or better appointed library building. The library is open fourteen hours daily, during the academic year, except on Sundays and legal holidays. At the opening of the college year introductory lectures on the use of the library are given to new students by the University librarian.

The library of the University of Wisconsin, including its branches, contains about 96,000 volumes and 30,000 pamphlets. The catalogue is the usual dictionary card catalogue of authors, subjects and titles in one alphabetical arrangement. Subject to certain restrictions, books may be drawn by all members of the University. Students are required to make a guarantee deposit

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of $2.00 with the Secretary of the Regents preliminary to borrowing books from the library. This amount is refunded on presenting to the Secretary the library deposit card properly endorsed by the Librarian.

In general, the library aims to be uniformly developed in all fields, but appropriations and gifts in recent years have rendered it specially strong in the lines of economics, political science, and Germanic and classical philology. Through the kindness of Professor E. T. Owen, the library contains on deposit the Owen library of works on French language and literature, numbering 900 volumes. In 1899, liberal German-American citizens of Milwaukee contributed the sum of $3,150 for the purchase of a Germanic philology seminary library. This fund has been expended to supplement and develop the German department of the library, thus furnishing unexcelled facilities for the study of the German language and literature. The additions to the library from this source number two thousand volumes. During the academic year 1900-1901, the library received two notable gifts, one of $2,000 from three Milwaukee citizens for the purchase of books for the School of Commerce, and the other of $2,645, contributed by friends of the University in New York City, Milwaukee, and elsewhere, to the School of Economics and Political Science for the development of the library in those fields. These gifts have increased greatly the library facilities of the departments mentioned. In December, 1901, the late President Charles Kendall Adams presented to the University his fine private library of 2,000 volumes, especially rich in material on European history. A gift of $500 from Mr. Frederick Vogel of Milwaukee, in 1902, has been expended for a collection of 600 volumes in the field of political science and modern French legislative history. A collection of 500 volumes on political science was presented in 1904 by Mr. John Kremer of Milwaukee. A fund of $250 was given in 1903 by the Milwaukee Gas Light Company, the annual income of which is to be used for the purchase of the *Zeitschrift für Farben- und Textil-Chemie*, and works on related subjects.

The College of Law has a special library of 8,500 volumes; and the Washburn Observatory is provided with the Woodman Astronomical Library, now containing 2,500 books and 2,500 pamphlets. The agricultural library of about 6,500 volumes is located on the first floor of the new Agricultural Hall. The pharmacy library in North Hall is specially strong in sets of pharmaceutical

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journals, most of which are placed on deposit by Professor Edward Kremers for the use of the University. In the reading room of the Engineering Building are kept the current files of about 150 of the most important engineering and technical periodicals, together with a collection of engineering reference books.

The Library of the State Historical Society contains over 134,000 volumes and 125,000 pamphlets. It is exceptionally rich in manuscript and other material for the study of the history of the Mississippi valley. The Society's files of newspapers, periodicals, and the publications of historical societies are among the most complete in the United States. There is an unusually full collection of published colonial records and United States government documents, and the material for the study of American state and local history, western travel, the revolution, slavery, and the civil war, is abundant. In English history the library possesses the Calendars of State Papers, the Rolls Series, the publications of the Camden Society, the Records Commission, and the Historical Manuscripts Commission, the journals and debates of Parliament, and several important collections for the study of local history.

The Library of the Wisconsin Academy of Sciences, Arts, and Letters is a valuable collection of reports and transactions of learned societies, comprising about 5,000 volumes. It is placed in the new library building, and constitutes a useful supplement to the other libraries in this special field.

Members of the University also have free access to the State Law Library in the Capitol, which numbers about 40,000 volumes. By special arrangement students are allowed to draw books from the Madison Free Public Library, located in the City Hall. This is a well selected collection of over 15,000 volumes.

The excellence and extent of these libraries is such as to make Madison among the first, and in some departments the first, of library centers west of the Alleghanies.

LABORATORIES.

CHEMICAL LABORATORIES.—The chemical laboratories, six in number, are in a building devoted exclusively to Chemistry. Four of these are general laboratories, viz.:

First, the qualitative laboratory, with accommodations for ninety-six students; *second*, the organic laboratory, accommodating thirty-two students; *third*, the quantitative laboratory, ac-

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commodating forty-eight students; and, *fourth*, the laboratory of physical chemistry, accommodating twenty-five students.

These laboratories, although large, well-lighted, conveniently arranged, and well supplied with the necessary apparatus and equipments, have been found inadequate for the needs of this rapidly growing department. In view of this fact the legislature in 1903 appropriated $100,000 for a new chemical building, which is now in process of construction. (See p. 36.) When this is completed the old laboratory will probably be used for chemical engineering.

PHYSICAL LABORATORIES.—The instruction in the department of physics is designed to meet the needs of all classes of students, from those just entering, with no knowledge of the subject, to those who have been well trained, and who are prepared to continue in the more advanced courses or to take up a line of original investigation.

The physical laboratories are located on the first floor and in the basement of Science Hall, and are commodious and well lighted. Besides the lecture room and the large apparatus room, the first floor contains the general physical laboratory, which is new and complete in its appointments in every respect. The lecture room has a seating capacity for 150 students, and is provided with all the appliances to facilitate a complete course of experimental lectures. In the basement are three large general laboratories for undergraduate work and a number of laboratories for special investigation, all of which are liberally supplied with piers to insure perfect stability of the instruments used. A well-equipped workshop under the direction of a skilled mechanic is an important feature of the department. Besides current supplied from the numerous dynamos in the University shops, the various rooms of the physical laboratory are connected with the electric light and power circuits of the city.

The physical apparatus includes, in addition to the equipment for demonstration purposes, an excellent collection of instruments adapted to measurement and investigation. The laboratory offers special facilities for carrying out graduate study and research.

MINERALOGICAL LABORATORY.—The laboratory of mineralogy is located on the second floor of Science Hall, where desks and chemical reagents for courses in blow-pipe analysis and determinative mineralogy are provided for a class of forty students; there is also a goniometer room which can be darkened for the

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study of crystals. In the mineralogical lecture room are the necessary models of crystals in glass and wood, and working collections of crystals and minerals.

PETROGRAPHICAL LABORATORY.—This laboratory is supplied with polarizing microscopes, other necessary apparatus, and a very complete set of rocks and of rock and mineral sections, for courses in optical mineralogy and petrology. The general and special collections mentioned under the caption of Museums are available for all advanced students of petrology.

GEOLOGICAL SEMINARY.—This room is fitted out as a department library with a full equipment of reference books, maps, charts, etc.

BIOLOGICAL LABORATORIES.—The elementary laboratory for the departments of botany and zoology is arranged to accommodate seventy-two students, and is provided with compound microscopes, dissecting microscopes, and other apparatus necessary to an elementary course in botany and zoology. The departments have about ninety compound microscopes, chiefly by Leitz and by Bausch & Lomb, fitted for elementary and advanced work.

BOTANY.—The laboratories for advanced work in botany are fitted up with the apparatus and reagents necessary to advanced courses in vegetable histology, physiology, and cytology. A greenhouse and a laboratory, also under a glass roof, occupy the fourth floor of the south wing of Science Hall, and have been specially equipped for work on the development and physiology of the lower plants, and for plant pathology. A special laboratory is provided for work in general physiology, and is equipped with apparatus for advanced and research work on irritability, protoplasmic motions, reproduction, etc. All necessary reagents, ovens, paraffin baths, and microtomes are provided for histological and cytological work. A considerable amount of apparatus for work on the special physiology of the flowering plants is also provided.

ZOOLOGY.—For advanced work in zoology a laboratory has been equipped with all necessary apparatus for regular classes, or for any special work that the students may elect. Compound and dissecting microscopes, microtome, paraffin bath, reagents, etc., are included in the equipment and are at the disposal of the students. In connection with much of the work done in zoology use is made of the museum which contains, besides the regular exhibit collection, special sets which have been purchased especially for use in the lecture room and laboratory. These include cases illustrating protective coloration, mimicry, sexual dimor-

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phism, etc. Many models are used in the laboratory; a nearly complete set of Ziegler models illustrating life-histories of invertebrates, besides a large number of Blatschka models, especially rich in protozoa and coelenterata. A large collection illustrating the life histories of insects, both alcoholic and dry preparations, while exhibited in the museum have been purchased especially for lecture and laboratory work. A dark-room, equipped with electrical and other apparatus, has recently been added for the study of animal behavior.

For courses in invertebrate zoology and entomology a laboratory has been equipped for carrying on the regular courses or advanced work that the students may elect. In connection with the laboratory, and to be used by the students, are museum collections, especially the sets of models and life histories, and a number of smaller collections for the laboratory and the lecture room.

Anatomy.—There are laboratories devoted to human anatomy, vertebrate anatomy, histology, and embryology. The histological laboratory is provided with a full equipment of microscopes, microtomes, and the various stains and reagents necessary for the work. For illustrating the lectures in histology there are a large number of models, wall charts, and an extensive set of lantern slides to which additions are being constantly made. For the work in embryology a similar equipment is provided. For the study of human anatomy a supply of well preserved material is maintained. A large number of models by Steger of Leipzig, Tramond of Paris, Zeigler of Freiburg, Auzoux of Paris, and other well-known firms are provided to assist the student in his work. Each student has the use, under proper restrictions, of these models and of skeletons, articulated and disarticulated skulls, ligament preparations, etc.

For those prepared to carry on advanced research special laboratory facilities are provided.

A Journal Club meets once a week for the discussion of important contributions to anatomical science.

Bacteriology.—The laboratories for the College of Letters and Science are located on the fourth floor of South Hall; those for the College of Agriculture on the first and second floors of the Agricultural Building. The laboratories in South Hall consist of a suite of nine rooms, including a large general laboratory and an advanced laboratory with special rooms for individual research.

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THE AGRICULTURAL LABORATORIES.—The well-equipped laboratories of the College of Agriculture provide unusual opportunities to students, especially those pursuing advanced work, because of the wide range of both practical and research efforts conducted by the Experiment Station. The Chemical department, for example, is, by legislative action conferred upon the Station, entrusted with the supervision and licensing of all commercial concentrated feeding stuffs and commercial fertilizers sold in the State. The Horticultural department has charge of nursery inspection, likewise by legislative act. The Agricultural Bacteriological department is in close association with the State Sanitary and Live Stock Commission. The Dairy department converts more than four million pounds of milk annually into various commercial dairy products. The large complement of live stock at the farm is in use at all times in feeding experiments. The Physics department conducts soil and plant culture researches. The Agronomy department is striving to improve our grains and forage plants. The Agricultural Engineering department studies and experiments with the various tools, implements, etc., used on the farm. All these efforts converge in the laboratories of the College, giving unusual force and character to all done therein.

THE STATE HYGIENIC LABORATORY is located on the third floor of South Hall, and the abundant material here furnished for diagnostic purposes is also utilized for class room and research work.

THE PSYCHOLOGICAL LABORATORY.—This laboratory is designed to illustrate by practical experiments and demonstrations the courses in psychology; to give an opportunity to students of experimental psychology to study the methods, equipments, and results of this science, and to provide for original research in many directions.

Original research has been carried on for several years and the more important results have been published in the *American Journal of Psychology*, the *Psychological Review*, and elsewhere.

In addition to four series of studies from the laboratory already published, the work done in the laboratory has been the basis of several articles that have appeared or are about to appear in various periodicals, as well as of theses submitted for degrees.

The Engineering, Assaying, Pharmacy, and Agricultural laboratories are described under their respective departments.

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UNIVERSITY MUSEUMS.

OFFICERS.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.

ROBERT A. HARPER, Ph. D., Professor of Botany, Curator for Botany.

WILLIAM S. MARSHALL, Ph. D., Assistant Professor of Zoology, Curator for Zoology.

WILLIAM S. MILLER, M. D., Assistant Professor of Vertebrate Anatomy, Curator for Vertebrate Anatomy.

WILLIAM H. HOBBS, Ph. D., Professor of Mineralogy and Petrology, Curator for Mineralogy and Petrology.

N. M. FENNEMAN, Ph. D., Professor of General and Physiographic Geology.

C. K. LEITH, Ph. D., Professor of Economic and Structural Geology, Curator for Economic and Structural Geology.

ROLLIN H. DENNISTON, Ph. D., Curator for Pharmaceutical Collections.

The University museums comprise the Geological and Mineralogical Museum, the Biological Museum, the Herbarium, and the Drug Cabinet, which occupy respectively the second and third floors of the south wing of Science Hall. The collections in the College of Engineering and the College of Agriculture are described on later pages.

THE GEOLOGICAL AND MINERALOGICAL MUSEUM has been built up for the most part with special reference to instructional work. It is divided into four parts, one devoted to systematic paleontology, one to systematic collections of minerals and rocks, one to a systematic collection of ores, and another to relief models illustrating topographic and geologic features. The paleontologic section includes the Powers collection of Wisconsin Silurian fossils and also the Wisconsin Academy of Arts, Science, and Letters collection containing the type fossils described in the volumes of the first Wisconsin Geological Survey of Wisconsin. In the mineral and rock section is included the Henry collection from southwestern Wisconsin and several of the well-known illustrative collections of rocks.

A large amount of general illustrative material, not coming directly under the above heads, is exhibited in cases in the halls of the geological department.

A number of additional collections are at present stored in the

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lecture rooms, laboratories and offices, and are accessible to students interested. These include a collection of 40,000 specimens and 20,000 thin sections, belonging to the Pre-Cambrian and Metamorphic Division of the United States Geological Survey, one of the largest of its kind in the world; a large collection of New England rocks belonging to the same survey; the collections of the Wisconsin Geological Survey; and the Hobbs collection, mainly of European rocks, supplied with over 1,000 thin sections. Of technical interest are the special collections of metallurgical, pharmaceutical, and engineering specimens, and the collection of Wisconsin building stones and clays made by the Wisconsin Geological Survey.

THE ZOOLOGICAL AND BOTANICAL MUSEUM is in the third story of the south wing of Science Hall, directly above the geological museum. Among the specimens at present placed in the cases may be named a good collection of vertebrate skeletons; a complete set of Zeigler models illustrating various stages in the development of vertebrates and invertebrates; models of the brain and sense organs; a large number of Blaschka glass models of invertebrates; an alcoholic collection of invertebrates from the Naples Zoological Station; representative collections of echinoderms, corals, and mollusks. The botanical cases contain a collection of Auzoux models of flowers and a collection of specimens of wood. The Owen collection of Lepidoptera, comprising five thousand species, and over twenty thousand specimens, is deposited in Science Hall.

THE HERBARIUM of the University (Room 41, Science Hall) includes the Lapham collection, chiefly of flowering plants, purchased by the State from the estate of I. A. Lapham, of Milwaukee. This collection, which contained about 8,000 species, has been mounted and arranged and is now accessible for study. The Wisconsin plants have been separated from the rest, and it is the intention to make them the nucleus of a complete representation of the Wisconsin flora. Large additions have been made to this herbarium by Professors L. S. Cheney and H. L. Russell. Mr. Lapham's collections also included a considerable number of algæ, lichens, and mosses. The collection of mosses has been very greatly extended by gifts, purchases, exchanges, and collections acquired, so that it now includes almost all of the species known to North America, besides a large number of those from other countries. Many valuable types and sets of exsiccati are included.

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The collection of algæ and parasitic fungi contains the principal North American exsiccati as well as large local collections. There is also a large and rapidly growing collection of alcoholic and dried specimens of the fleshy fungi of the State.

The biological seminary room contains a department library with the main reference books and periodicals in zoology and botany, and card catalogues of biological literature.

THE DRUG COLLECTION.—At present this collection contains about 4,500 sample specimens of drugs for purely illustrative purposes. Each year large additions come to it as contributions from various sources. Among the larger contributors are Schimmel & Co., of Leipzig, Germany, Lehn & Fink, Parke, Davis & Co., and Gilpin, Langdon & Co. The collection is well supplied with drugs of Asiatic origin. Notable among them are a collection of fifty Ceylon drugs and medicines and a collection of more than one hundred Malay medicines.

THE CHEMICAL COLLECTION.—The collection here described is located in North Hall. Through the liberality of the United Alkali Company of England, some fifty specimens of their products in various stages of manufacture were obtained. Dr. William Simon, of Baltimore, has contributed a series of specimens illustrating the manufacture of bichromate and ferrocyanide of potassium. Fries Bros., of New York, have donated a number of synthetics used in perfumery. A similar collection has recently been received from the Herbene Chemical Co. of New York. A cabinet for volatile oils contains fine collections from Schimmel & Co. of Leipzig, Germany; Bertrand Fils of Grasse, France; Dodge and Olcott, New York; and others. A cabinet for dye-stuffs contains over 350 samples of artificial dye-stuffs from the Farbenfabriken of Elberfeld & Co. of New York. This collection is supplemented by ten volumes of richly illustrated descriptive matter, to which additions are being constantly received. Large and valuable collections of modern synthetic new remedies have been received from Schering and Glatz, the Farbenfabriken of the Elberfeld Company, and from Merck & Co., all of New York. Numerous smaller donations have been received within recent years.

When the museums are not open to the public, access may be gained by visitors at all reasonable hours by calling upon the janitor of the building.

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THE WASHBURN OBSERVATORY.

The Washburn Observatory is excellently equipped for astronomical work. Its principal instruments are: An equatorially-mounted telescope of 15½ inches aperture, constructed by Alvan Clark & Sons; a meridian circle, by A. Repsold & Sons, of Hamburg, with the accessories of such instruments.

A full account of the Washburn Observatory will be found on a later page (see Index).

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GENERAL INFORMATION.

UNIVERSITY REGULATIONS.

THE COLLEGE YEAR.

The college year is divided into two semesters. The first semester opens on the last Wednesday in September. Registration and examinations for admission will be held on the preceding Tuesday, and on the opening day of the semester. The second semester ordinarily begins on the second Monday in February. Commencement Day falls on the Thursday preceding the last Wednesday in June.

There are two recesses or vacations during the college year, one at Christmas and one at Easter. The Christmas recess begins at the end of the second day before Christmas, and closes at the beginning of the second day after New Year's Day, when this falls on Sunday, Monday, or Tuesday. When New Year's Day comes later in the week than Tuesday, the recess closes at the beginning of the following Tuesday. The Easter recess begins on the Thursday morning before Easter Sunday, and closes on the morning of the following Tuesday.

STUDENT ADVISERS.

In the College of Letters and Science, the College of Engineering, and the College of Agriculture, each student is placed under the immediate charge of a member of the Faculty, who acts as his adviser in matters pertaining to University work. The student must consult his adviser in choosing studies, and obtain his approval before classes can be entered.

The system of student advisers is somewhat different in the colleges mentioned above, and does not obtain in the College of Law and the School of Music.

CONVOCATIONS.

A weekly assembly or convocation of the students is held on Friday of each week at noon. At this meeting the President

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makes general announcements to the students, and speaks upon subjects of general interest. Persons of note, either within or without the University, frequently make addresses on matters of University interest, questions of contemporary history and politics, or recent advances in pure and applied science. Music is made an important feature of the programme.

HONORS.

Honors are given at graduation for special work of high order of excellence done in any department. Such honors will be voted by the Faculty to those students whose graduation theses show exceptional excellence, and who have completed with unusual success a long course of study in the department in which the thesis is presented. The thesis must show work additional to all requirements for graduation equal to two hours a week for one year. Students desiring to become candidates for special honors in any department must make application to the Faculty, at the opening of the second semester, through the professor in whose department the honors are sought.

UNDERGRADUATE SCHOLARSHIPS AND FUNDS.

SCHOLARSHIPS FOR UNDERGRADUATES.

The Amelia H. Doyon Scholarships.

By the will of Mrs. Amelia H. Doyon, late of Madison, the University has received a gift of $5,000, to be known as the Amelia H. Doyon Fund. The income from this fund is to be divided into two equal parts, to be designated as the Amelia H. Doyon Scholarships, which are to be given to young women in attendance at the University, to be selected by the Faculty. In making this selection the Faculty is to take into consideration the scholarship or standing of the persons selected and their need of financial help. Neither of these scholarships is to be bestowed on any young woman who has not been in attendance as a student at the University of Wisconsin for at least one year.

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Hebrew and Hellenistic Greek Scholarships.

The Biblical Alliance of Wisconsin offers a sum of money, at present amounting to $1,500, to provide scholarships for the encouragement of study in the department of Hebrew and Hellenistic Greek. These may be held by graduates or undergraduates. Award is made on basis of excellence. Information regarding the scholarships will be given on application to Professor W. H. Williams.

For the graduate scholarships, see the Graduate School.

The Lillian Paige Allis Scholarships.

Through the liberality of Mrs. Lillian Paige Allis, of Madison, the department of German offers two scholarships, one open to juniors and the other to seniors, having a value of $50 and $100 respectively.

The Christian R. Stein Scholarship.

By the will of the late Christian R. Stein, of Madison, a bequest of $1,000 was made to the University, the interest of which maintains a scholarship to be given by the Faculty to a student of the University who has been in attendance at least one year.

The Frederick C. Thwaits Scholarship.

Mr. Frederick C. Thwaits of Milwaukee has generously made provision for an annual scholarship of $250, to be awarded to a young man in the graduating class of one of the Milwaukee high schools, on a basis of scholarship and need of financial assistance. In 1905 this scholarship will be assigned to the East Division High School.

LOAN FUNDS AND STUDENT AIDS.

The John A. Johnson Fund.

The University is indebted to the liberality of the Hon. John A. Johnson, late of Madison, for a fund of $5,000, the interest of which is loaned to students. The sum obtained by one student in one year shall not exceed $50, and the total amount shall not exceed $200. At present the benefits of the fund are limited to Scandinavian students. The income of this fund is loaned by a subcommittee of the Faculty Committee on Loan Funds, consisting of Professors Olson and Bull.

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The Graduating Class Fund.

The class of 1900 gave to the University several hundred dollars, the profits of the Senior Class Play, as the nucleus of a loan fund for the aid of needy students, to which the succeeding classes have made substantial additions. The money hitherto received has been loaned to students on promissory notes. This fund is under the charge of the Faculty Committee on Loan Funds, consisting of the President of the University, Professor Storm Bull, Chairman, and Professors Olson, Voss, Gay, and Mayhew.

The Secretary's Fund.

The Secretary of the Regents in 1900 established a fund of $500 for the aid of meritorious students. Additions to the fund have been made by others. No loan shall exceed $50 in a single year, and the aggregate loans to any person shall not exceed $200. This fund is managed by the Secretary.

The Geneva Loan Fund.

This fund of $450 was provided in December, 1903, by Mrs. E. P. Allis and Mr. Louis Allis, of Milwaukee, and by Mr. Frank W. Allis (member of the Short Course class of 1897), proprietor of Monona Farm, Madison. It is available to needy members of the Short Course classes of the College of Agriculture only, in small amounts. Loans from this fund may be made through the Dean of the College of Agriculture.

Employment Bureau.

The Young Men's Christian Association of the University conducts an employment bureau for the benefit of those students who find it necessary to contribute to their own support. Students who are willing to do good work can, in most cases, be supplied with remunerative employment. The positions that are most frequently supplied are: waiting on table, tending furnace, assisting in the house, caring for lawns, and serving as stenographer, typewriter, or clerk. In 1903-04 five hundred and three positions, of an estimated value of over $7,000, were secured for one hundred and ten young men.

PRIZES IN RHETORIC AND ORATORY.

The Steensland Prize in Debate and Essay.

Hon. Halle Steensland of Madison has given the sum of $300, to be known as The Steensland Prize in Debate and Essay. One

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hundred dollars is to be awarded each year, beginning in 1905-06, as follows: Seventy dollars to the best three debaters in a debate open to all the students of the University, to be thus apportioned: Forty dollars to the one who stands first in such contest; twenty dollars to the second, and ten dollars to the third. Thirty dollars of the one hundred is to be given for the best essay. For the three years the subjects are: (a) Good citizenship: What is it, and how can it best be promoted. (b) The habit of punctuality a prime element in character, and an important requisite for a successful life. (c) The simple life: What is its scope and its value.

The Cream City Prize in Oratory.

There has been presented to the University by five citizens of Milwaukee, the sum of $500, to be known as The Cream City Prize in Oratory. One hundred will be awarded each year to the winner of the Final Oratorical Contest in the University, which is preliminary to the Northern Oratorical League Contest. The friends who have generously given this prize are: Mrs. E. P. Allis, Mr. F. G. Bigelow, Mr. James M. Pereles, Mr. Albert O. Trostle, and Mr. William M. Osborne.

SOCIETIES AND PUBLICATIONS.

LITERARY AND SCIENTIFIC SOCIETIES.

The literary or debating societies of the University have played so important a part that they may almost be said to constitute a department by themselves. The Athenæan and the Hesperian societies are nearly as old as the University itself, Athena having been organized in 1850, and Hesperia in 1854. Philomathia was organized in 1886, and Olympia in 1902. These societies are sustained with great enthusiasm, and are an important means of intellectual training. Athena, Hesperia, and Philomathia form what is known as the Joint Debate League, which arranges annually a public debate between two of these three societies. This joint debate has been a feature of the University for nearly forty years. These four above-mentioned are men's societies in the College of Letters and Science. The two chief debating societies of

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the College of Law are the Forum and the Columbia. These six societies form the inter-collegiate debating league, from the members of which inter-collegiate debaters are chosen.

The young women maintain two literary societies, Castalia, established in the early years of the University, and Pythia, in 1902.

The Luther S. Dixon, Andrew A. Bruce, John Marshall, and Edwin E. Bryant law clubs afford valuable practice in the trial of cases. The Short Course Literary Society and the Dairy Course Literary Society in the College of Agriculture offer opportunities for the discussion of questions of special interest to this department. The N. O. Whitney Engineers' Association, the University of Wisconsin Engineers' Club, the J. B. Johnson Engineering Association, and the Civil Engineering Society in the College of Engineering, discuss professional and semi-professional subjects.

The most important scientific organization in the University is the Science Club, which includes both officers of instruction and advanced students, and seeks to promote an interest in scientific study and research. It conducts public meetings for the untechnical discussion of scientific topics of current interest. A bronze medal, executed by T. Moring, London, is annually awarded by the Club for the best baccalaureate thesis on a scientific subject. The Historical and Political Science Association and the Language and Literature Club are new societies organized by instructors and graduate students for the purpose of fostering advanced work. In various departments of the University there are journal clubs or societies for furthering the special work of the departments. Among these are the *Germanistische Gesellschaft;* a Scandinavian society, the *Nora Samlag;* the Pharmaceutical Society; the Classical Club; the Physics Journal Club; the Biological Club, and the Chemical Club. In other departments, where no such organization has been effected, similar results are reached by means of the various seminaries. The graduate students of the University maintain a Graduate Club. The Haresfoot Club is maintained by University Dramatic talent, and presents a play annually; the Red Domino Club is a similar organization maintained by young women; and the Edwin Booth Club aims to promote dramatic interest and train dramatic talent.

SOCIAL AND RELIGIOUS ORGANIZATIONS.

The women have organized a Woman's Self Government As-

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sociation, which seeks to further in every way the unity of spirit of women in the University, to increase their sense of responsibility toward each other, and to be a medium by which the social standard of the University can be made and kept high. The religious organizations of the University include the Young Men's Christian Association, and the Young Women's Christian Association. Honorary fraternities are represented by Phi Beta Kappa, established in 1898, and Tau Beta Pi, the honorary engineering fraternity, established in 1899.

PUBLICATIONS OF THE UNIVERSITY.

The University issues five series of publications, giving the results of research in the University, under the general title, *Bulletin of the University of Wisconsin.* These series are (1) Economics and Political Science, (2) History, (3) Philology and Literature, (4) Science, (5) Engineering.

The Washburn Observatory issues the *Publications of the Washburn Observatory*, edited by Professor George C. Comstock.

From the College of Agriculture are issued the *Bulletins of the Experiment Station*, the *Annual Reports*, and the *Bulletin of the Farmers' Institutes.*

A further statement in reference to the above publications is found in the Appendix. Application should be made to E. F. Riley, Secretary of the Regents, for the *Bulletin*, to Professor G. C. Comstock for the publications of the Washburn Observatory, and to Dean W. A. Henry for the publications of the College of Agriculture.

Besides these official publications of investigations the following are edited at the University:

Bulletins of the Wisconsin Geological and Natural History Survey, edited by Professor E. A. Birge, Director.

Transactions of the Wisconsin Academy of Sciences, Arts and Letters, edited by Professor E. B. Skinner, Secretary.

The Pharmaceutical Review, edited by Professor Edward Kremers.

The Municipality, edited by Dr. Samuel E. Sparling.

Paedagogische Monatshefte, Dr. Edwin C. Roedder, Associate Editor.

The University also issues a general series of the *Bulletin*, which includes the annual Catalogue, special announcements of the Graduate School, the Summer Session, the College of Engi-

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neering, the College of Agriculture, the College of Law, the School of Music, the Course in Commerce, the Course in Pharmacy, and of various departments in the College of Letters and Science. These publications are issued during the second semester, and may be had upon application to the Registrar of the University.

The *Directory of Officers and Students* is issued by the University in the early part of the academic year. It gives the University and city address of the officers of instruction and government, and the home and city address and the class of each student.

The *General Catalogue of the Officers and Graduates of the University of Wisconsin* gives a complete list and classification of the graduates of the University and their present address and occupation, and the terms of service of the regents and members of the instructional force. This catalogue gives also a list of the recipients of honorary degrees, and of higher degrees conferred for work done. It is published once in five years, under the editorship of Professor D. B. Frankenburger, and may be had, for 10 cents to cover postage, upon application to the Secretary of the Regents. The last edition was published in 1902.

STUDENT AND ALUMNI PUBLICATIONS.

The publications conducted by the students include *The Daily Cardinal;* a bi-weekly illustrated humorous publication, *The Sphinx;* a monthly, *The Wisconsin Literary Magazine;* and an annual, *The Badger*, issued by the Junior Class. The students of the College of Engineering issue a quarterly publication, *The Wisconsin Engineer.* A monthly journal, *The Wisconsin Alumni Magazine*, is issued by the alumni.

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ADMISSION TO THE UNIVERSITY.

METHODS OF ADMISSION.

Students are admitted either upon examination at the University, or upon certificates from accredited schools, except that students and graduates of the Normal schools of this state, students from other colleges and universities, and adult special students, are admitted in accordance with the provisions stated on pp. 69-71.

For the examinations at the University, see p. 68.

TIME OF ENTRANCE.

New students ordinarily enter the University at the opening of the first semester; but there are advantages in beginning work in the Summer Session, not only to the student who needs to strengthen his preparation, but also to the strong student, who through the advantages offered by the Summer Session may complete his University course *in three years.* (See p. 335.)

In a general way it is, moreover, advantageous to any student to begin work in the Summer Session, for the following reasons: He becomes familiar with University methods of instruction before the heavier work of the year begins; he receives more personal attention, as the classes in summer are smaller; and his experience and the advice of his instructor will enable him more wisely to shape his course.

New students may enter at the beginning of the second semester, but they should be on hand the week preceding, in order to make the necessary arrangements, as the regular work of the semester begins promptly on Monday morning.

ENTRANCE REQUIREMENTS.

The requirements for admission are stated in terms of units. The term *unit* means the equivalent of five recitations a week for one year in one branch of study. In closely allied branches not usually taught in periods of one year each, such as physiology and zoology, units may be constructed by adding the respective time-values of such studies. In any subject three recitations a week for one year and a half may be counted as one unit.

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Fourteen units are required for admission. Until the academic year 1905-06 equivalents will be accepted for the two units of language required. Students applying for admission in 1905-06 and thereafter who offer fourteen units which do not include two units of foreign language, will be admitted on condition that the language requirements be met before graduation. This will ordinarily require extra work to the extent of four hours a week for one year. This privilege will be extended only to graduates of schools in the State of Wisconsin, and opportunity for making up the deficiency in language will be offered by the University.

No language course of less than two units will be accepted. Not more than four of the required fourteen units will be accepted in any one subject.

The entrance requirements are presented under two general heads: I, studies required of all; II, optional groups.

I. The following units are required of all:

Mathematics,	2 units
English,	2 units
History,	1 unit
Science,	1 unit

II. In addition to the requirements under I, eight units from one of the four following groups must also be offered:

Group A.

Latin, 4 units.

Any 4 units from the following:

Greek,	2 units
German,	2 units
French,	2 units
Elective,	2 units

(from groups B, C, and D.)

Group B.

Latin, 4 units.

Any 4 units from the following:

English,	1 or 2 units
History,	1, 2, or 3 units
Civics, Economics,	1 unit
Mathematics,	1 unit
Science,	1, 2, or 3 units
Foreign Language,	2 units

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Group C.

German or French, 4 units

Any 4 units from the following:

English,	1 or 2 units
History,	1, 2, or 3 units
Civics, Economics,	1 unit
Mathematics,	1 unit
Science,	1, 2, or 3 units
Foreign Language,	2 units

Group D.

German or French, 2 units

Any 6 units from the following:

English,	1 or 2 units
History,	1, 2, or 3 units
Civics, Economics,	1 unit
Mathematics,	1 unit
Science,	1, 2, or 3 units
Latin,	2 or 3 units
French or German,	1, 2, or 3 units

REQUIREMENTS FOR ADMISSION TO THE SEVERAL COLLEGES AND COURSES OF THE UNIVERSITY.

College of Letters and Science. The studies under I, and any one of the groups A, B, C, or D, under II.

College of Engineering. The studies required of all, under I, and any one of the groups A, B, C, or D, under II, except that physics, 1 unit, must be included in the studies offered. One unit of approved manual training (including drawing) will be accepted as one of the four or six elective units to be offered. Groups B and C are recommended as giving the most satisfactory preparation, and students are advised to include chemistry and advanced mathematics in the subjects offered. Students who do not present at least two units of foreign language for admission will find it difficult to complete any of the courses in engineering in four years.

In the fall of 1905 and thereafter, all students entering the College of Engineering will be required to pass an examination in algebra. It is essential that students in the engineering courses shall possess a good working knowledge of algebra *at the time when they begin their course*, and it is the purpose of the examination to secure this by requiring a review of the subject shortly before entering the University. Students failing in the examination will not be permitted to enter the regular algebra classes for engineering students until the deficiency is made up.

In the fall of 1906 and thereafter, students entering the College of Engineering will be required to present as part of the fourteen units required, an additional half unit of algebra, covering such ground as is hereinafter indicated.

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College of Agriculture. The studies required of all, under I, and either group C or group D, under II.

College of Law. The studies required of all, under I, and any one of the groups A, B, C, or D, under II, and also credits equivalent to the work of the freshman year in the College of Letters and Science.

Course in Commerce. The studies required of all, under I, and any one of the groups A, B, C, or D, under II.

Course in Pharmacy. FOUR YEARS' COURSE. The studies required of all, under I, and any one of the groups A, B, C, or D, under II. No practical experience in pharmacy is required. TWO YEARS' AND THREE YEARS' COURSE: I. Graduates from high schools are admitted without examination and without practical experience in a drug store. II. Non-graduates are admitted if they comply with the following requirements:—

1. They must be at least eighteen years of age.
2. They must present satisfactory certificates of at least one year's attendance from some standard high school, or its equivalent from a similar educational institution.
3. The time intervening between the secondary education and the college course should have been spent in a drug store, where physician's prescriptions are regularly compounded.

SCOPE OF THE PREPARATORY WORK.

The following description serves to indicate the extent of the preparation expected in each of the several subjects named in the preceding requirements for admission:

English.

ENGLISH. 2, 3, or 4 units. The two units in English required of all applicants for admission should be made up of composition and rhetoric, and readings in English classics, as follows:

COMPOSITION AND RHETORIC. All students entering the University will be examined in English composition. This examination will be a simple and practical one, designed to test the student's ability to express himself in clear, correct, idiomatic English. The student will be required to write an essay, or more than one, on a familiar theme, planning his work by paragraphs and constructing both paragraphs and sentences in accordance with the simpler principles of composition. No student will be passed whose work shows serious weakness in spelling, punctuation, grammar, or sentence structure; neatness of manuscript will also be taken into account. Facility of expression will not be considered an offset to serious weakness in spelling, punctuation, or grammar. Stu-

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dents found deficient in English composition who do not make up such deficiency in one year will be dropped from the University.

READING OF CLASSICS. The following lists include (1) a series of books for general reading, which may also be used as a basis for work in English composition; (2) a limited number of masterpieces for thorough study. In addition to the essays called for under the head of Composition and Rhetoric there will be required such further tests as seem suited to secure a careful reading of all the books prescribed in series (1). In the case of the books set for more thorough study the candidate will be examined on subject-matter, form, and substance, and the examination will be of such a character as to require a thorough study of each of the works named, in order to pass it successfully.

1. For General Reading and Composition work: 1905—the *Sir Roger de Coverley Papers*, Goldsmith's *Vicar of Wakefield*, Scott's *Ivanhoe*, Shakespeare's *The Merchant of Venice* and *Julius Caesar*, Coleridge's *The Ancient Mariner*, Carlyle's *Essay on Burns*, Tennyson's *The Princess*, Lowell's *The Vision of Sir Launfal*, George Eliot's *Silas Marner*.

In 1906, 1907, and 1908: Shakespeare's *Macbeth* and *The Merchant of Venice: The Sir Roger de Coverley Papers in The Spectator;* Irving's *Life of Goldsmith;* Coleridge's *Ancient Mariner:* Scott's *Ivanhoe* and *The Lady of the Lake;* Tennyson's *Gareth and Lynette, Lancelot and Elaine*, and *The Passing of Arthur;* Lowell's *Vision of Sir Launfal;* George Eliot's *Silas Marner*.

2. For thorough study: 1905—Shakespeare's *Macbeth*, Milton's *Lycidas*, *Comus*, *L'Allegro* and *Il Penseroso*, Burke's *Speech on Conciliation with America*, Macaulay's essays on Milton and Addison.

In 1906, 1907, and 1908: Shakespeare's *Julius Caesar;* Milton's *L'Allegro*, *Il Penseroso*, *Comus*, and *Lycidas;* Burke's *Speech on Conciliation with America;* Macaulay's *Essay on Milton*, and *Life of Johnson*.

In addition to these, it is expected that several other English classics will be read each year. The lives and characters of the authors read and the history of their times should be studied to a reasonable extent, but the chief aim should be *intelligent reading*. Particular attention should be given to enlarging the student's knowledge of vocabulary and idiom.

ENGLISH LITERATURE. One or two optional units may be offered in this subject in addition to the two prescribed units, described

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above. If one unit is offered, the work should include the history of English literature and the reading of representative authors of each period. The second optional unit may consist of additional work in the reading and study of the works of the chief English and American authors.

Mathematics.

ALGEBRA. 1 or 1½ units. The unit required of all students should include the following subjects: Addition, subtraction, multiplication, division, equations of the first degree with one unknown number, simultaneous equations of the first degree, factors, highest common factor, lowest common multiple, quadratic equations, simultaneous equations above the first degree, theory of indices (positive, negative, fractional, and zero), and radicals.

An additional half-year of Algebra is strongly recommended. (This half unit will be required of engineering students in 1906 and thereafter.) The work should cover the following subjects: Simultaneous quadratic equations; ratio, proportion and variation, including graphical representation of simple relations between two variables; arithmetical and geometrical progressions; binominal theorem for positive integral exponents; logarithms, including use of tables in simple numerical work.

GEOMETRY. 1 unit. Plane and solid geometry. In solid geometry special attention should be given to the geometry of the sphere.

TRIGONOMETRY. ½ unit. A knowledge of the important properties of the trigonometric functions, the more important formulas which follow from the addition-theorem, and of the solution of the various cases of the plane triangle. Care should be taken to make students familiar with the use of logarithmic and trigonometric tables.

History, Civics, and Economics.

HISTORY. 1, 2, 3 or 4 units. The requirements in history may be satisfied by the presentation of any one of the following "blocks":

Ancient History to the year 800 A. D., 1 unit.
Medieval and Modern History, 1 unit.
Medieval and English History, 1 unit.
English History, 1 unit.
United States History, 1 unit.

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One, two, or three additional blocks may be presented. A real equivalent may be presented in place of a block recommended above, but a one year's course in General History will not be accepted after 1905.

CIVICS. ½ unit. A knowledge of the relationships existing between subordinate and higher political units together with a description of the chief functions performed by the institutions of the various political units.

Civics may be combined with History or Economics in the construction of an elective unit.

ECONOMICS. ½ unit. Either (1) a knowledge of the leading facts relating to the rise and growth of modern industry, with special reference to the industrial history of England and the United States; or, (2) a knowledge of the fundamental principles of economic science as presented in a good elementary treatise on the subject.

Science.

BOTANY. 1 unit. The course in botany should cover a study of the life histories of types from the main groups of plants, and should include also a series of simple physiological experiments. At least two-thirds of the course should consist of laboratory work. For further details see the report of the committee of the Wisconsin State Teachers' Association for 1902 on a high school course in botany.

Where it is not possible to give a full year's work to the subject, Botany may be combined with Physical Geography and Physiology in the construction of units.

CHEMISTRY. 1 unit. A year's course of descriptive chemistry, consisting of both class-room and laboratory work. This course should include the more common metals and non-metals and their compounds. Two periods of laboratory work are considered as equivalent to one class exercise. A careful record of laboratory experiments should be kept, which must be submitted for examination by the committee on entrance examinations. Remsen's *Introduction to the Study of Chemistry*, Newell's *Experimental Chemistry*, and Storer and Lindsay's *Elementary Manual of Chemistry*, are suitable text-books among the many published. A laboratory manual should be used with any text.

PHYSICS. 1 unit. A year's course in Physics, including continuous and systematic laboratory practice; any one of the standard text-books may be used.

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PHYSICAL GEOGRAPHY. 1 unit. The Physical Geography should include: (1) The principles as presented in the best recent text-books, which give adequate treatment of the atmosphere and ocean and emphasize the development of topographic forms. (2) Field study. The nature of this must be controlled by the locality, but every candidate offering Physical Geography will be expected to submit a statement of the field trips required in his course. (3) The interpretation and habitual use of topographic maps, weather maps, charts, and pictures.

Where it is not possible to give a full year's work to the subject, Physical Geography may be combined with Botany and Physiology in the construction of units.

PHYSIOLOGY. ½ unit. In this subject instruction must be given in the anatomy, histology, and physiology of the human body, and the essentials of hygiene. The amount expected is indicated by that given in Martin's *The Human Body, Briefer Course.* The text-book work must be illustrated by charts and models; and the histology should also be shown by specimens.

ZOOLOGY. 1 unit. Instruction in this subject must include as much as four periods of laboratory work per week. The student must dissect at least eight or ten types of animals and make careful descriptions and drawings of this work. The types must be selected from the different branches of the animal kingdom. Knowledge of life histories and habits and relation of environment is also expected. The laboratory work must be accompanied with class exercises, so that the student may gain an intelligent appreciation of the meaning of his observations and of the bearing on zoological science of the facts observed hy him. Lectures or text-book work on classification and general zoology must be a part of the course. The nature and scope of work expected may be indicated by the text-books of Needham, Davenport, Jordan, and Kellogg.

Language.

GREEK. 2 units. Grammar; Lessons; Xenophon's *Anabasis*, four books; Homer's *Iliad*, three books, or an equivalent amount of the *Odyssey;* Greek composition.

LATIN. 4 units. Grammar and elementary book; *Caesar*, four books, or an equivalent amount of *Nepos*, *Caesar* (at least two books) and selections; *Cicero*, six orations (selections from the letters may be substituted for two orations); *Vergil*, six books; composition; preferably in connection with *Caesar* and *Cicero*.

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The statement above covers the 4 units of Latin in groups A and B. The requirements in these groups are planned with reference to the needs of those candidates who purpose to continue in the University the study of ancient and modern languages and of history.

LATIN. 2 units. Grammar and elementary book; *Caesar*, four books or an equivalent amount of *Nepos*. *Caesar* (at least two books) and selections; composition. Two units of Latin will be accepted when presented with two or more units of modern language as specified in groups C and D. Students who so present two units and others whose preparation in Latin is, for any reason, deficient may continue the study in the University with course A (see p. 130), which may be credited towards the bachelor's degree. No such credit, however, will be given for third and fourth year high school Latin.

GERMAN. 2, 3, or 4 units. German may be offered for entrance as a subject of two, three, or four units, requiring respectively two, three, or four years of high school study and approximately corresponding to the "elementary," "intermediate," and "advanced" courses outlined in the "Report of the Committee of Twelve." This report can be procured, at the price of sixteen cents, from D. C. Heath & Co., Boston, and should be in the hands of every secondary teacher of German.

A. Elementary German. 2 units. Applicants should be able to pronounce and to translate at sight (into good idiomatic English) simple German prose, help being given upon unusual words and constructions, to put easy English sentences into German, and to carry on a very simple conversation based upon the texts set for translation. The required amount of grammar is contained in the current "brief" grammars, or in the "first parts" of larger grammars like Joynes-Meissner or Thomas. Of the strong verbs only the more usual are required. Applicants should have read not less than 200 pages of easy German, chiefly modern narrative prose, but including some simple poems and one or two short plays. For suitable texts see the "Report," pp. 63-64.

B. Intermediate German. In addition to the work outlined under A, applicants should have read from 300 to 400 pages of moderately difficult prose and poetry, with constant practice, both oral and written, upon portions of the texts read. Of the latter about one-half should be taken from modern prose and the other half from poetry and the easier plays of Schiller, Goethe, or Les-

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sing. The work in Grammar, accompanied by exercises in composition, should include the less usual strong verbs, the principal uses of prepositions, conjunctions, and modal particles, and the essentials of syntax and word formation. For suitable texts see the "Report," p. 71.

C. Advanced German. Besides the work outlined under A and B, applicants should have read from 400 to 500 pages of standard literature in prose and poetry, with reference reading in the history of modern German literature, especially upon the lives and works of the authors studied. They should be able to translate at sight any ordinary modern German text that is free from unusual difficulties, to write a brief German essay on a simple topic relating to the texts read, and to follow a recitation conducted in German, answering in that language questions asked by the instructor. For suitable texts see the "Report," p. 73.

Students without preparation in German enter course 1. Those who have had two years of high school German will begin their work in the University with one of the courses 2, 2M, 2S, 2C, or 2E. Those who have had three years of German enter course 2A. Students who have studied German for four years in the high school regularly enter course 3A, unless their particular course of study requires a special class in German, as e. g. 3S, 3C, or 3E. (See p. 142.)

FRENCH. 2, 3, or 4 units. French may be offered for entrance as a subject of two, three, or four units, requiring respectively two, three, or four years of high school study, and approximately corresponding in difficulty to the "elementary," "intermediate," and "advanced" courses outlined in the "Report of the Committee of Twelve," pp. 113-117.

A. Elementary French. 2 units. The University desires that the effort of the elementary course be concentrated on that particular reading knowledge of French which is desired by the larger number of its students. What is offered by the applicant should accordingly be the following, or an equivalent amount of reading:

Otto's *French Conversation Grammar; Roman d'un Jeune Homme Pauvre* and *La Petite Fadette* (the former read mainly and the latter altogether independently of the class-room); *Le Cid, Le Misanthrope, Athalie.*

This course is expected to develop a fair pronunciation and knowledge of the essentials of grammar, especially syntax. The

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student is advised to spend his effort mainly on such texts as fully exhibit syntax difficulties in language free from technicality.

B. Intermediate French. The applicant should further have completed a conversation grammar, with practice in dictation, paraphrasing French, and reproducing from memory French which has been read to him. He should be able to use correctly the customary idioms of that language.

Or, if the applicant comes from another University, he may substitute approximately five hundred pages of critical reading in authors of intermediate difficulty.

C. Advanced French. The applicant should have continued the subject of composition to the point of simple essays, and have sufficient familiarity with spoken French to enable him to understand a simple lecture given in French, and to answer questions on it, in that language.

Or, if the applicant comes from another university, he may substitute approximately seven hundred and fifty pages of critical reading in such authors as Balzac or Victor Hugo (in his more difficult works).

Successful applicants who desire to continue the study of French in the University will be guided by this catalogue, p. 137, and by consultation with the members of the French instructional force.

MANUAL TRAINING. 1 unit. In order to present manual training for entrance, the applicant must have devoted 200 periods to each of the following two divisions of subjects:

(1) Shop Work
- a. Wood work.
- b. Forging.
- c. Chipping, filing and fitting.
- d. Machine tool work.

(2) Drawing
- e. Freehand drawing.
- f. Mechanical drawing.

(1) The course must include subdivision (a) and at least one of the subdivisions (b), (c), or (d). A note book containing a description and sketches of the work done is required.

(2) The course must include freehand and mechanical drawing. (e) Freehand and drawings of simple objects—with and without shading. (f) In mechanical drawing the plates must be well

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executed and the problems include projections of geometrical solids and working drawings of simple machine parts.

EXAMINATIONS AT THE UNIVERSITY.

The regular examinations of the University are two in number, one in June and one in September. The earlier one is intended for those who wish to be examined while fresh from their preparatory studies, and for those who wish to test their qualifications at an early date in order that they may have time to make up deficiencies if necessary. The September examination immediately precedes the opening of the first semester.

For the current year the earlier examinations will be held on Thursday and Friday, June 15 and 16, beginning at 9 o'clock A. M. The later examinations will be held on Tuesday and Wednesday, September 26 and 27, beginning at 9 o'clock A. M. Students who are in any doubt as to their qualifications are urged to present themselves in June. All candidates are required to be present at 9 o'clock on the first day of the examinations.

Candidates for admission to the University may divide the subjects and take the examinations in two trials; but a failure to pass all of the subjects in the two trials will necessitate a complete re-examination.

The character of the entrance examinations is indicated by the extent of the preparation expected in each of the several branches, as described under the heading Scope of the Preparatory Work, p. 60.

ADMISSION UPON CERTIFICATE.

ACCREDITED SCHOOLS.—Any high school or academy whose course of instruction covers the branches requisite for admission to the University may be admitted to its accredited list of preparatory schools after a satisfactory examination by a committee of the Faculty. Application for such an examination may be made by an officer of the school to the President of the University, on the basis of which a committee of the Faculty will examine the course of study and the methods of instruction in the school, and on their favorable recommendation and the concurrence of the Faculty it will be entered upon the accredited list of the University. No school will be placed upon the list whose course of study is not fully equal to the four-year course of high schools recommended by the State Superintendent. The graduates of

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such an approved school will be received by the University without examination, on the presentation of a certificate showing the satisfactory completion of the 14 required units, as stated on p. 58, and containing the recommendation of the principal. Forms for such certificates, prepared by the University, must be used, and may be obtained from the Registrar. These certificates should be sent to the University before August 1st.

Principals of accredited schools are requested to note the statement regarding the examination of freshmen in English, as stated on page 60, and also the statement regarding the additional requirement and examination in algebra for admission to the College of Engineering, as stated on p. 59.

The University desires to keep itself fully informed regarding the work of its accredited schools by means of annual reports and frequent inspections. Every accredited school is required to report each year concerning its teachers, course of study, methods of instruction, and material equipment. Blank forms are furnished by the University for this purpose. The University sends out inspectors at its own expense and at the convenience of the members of the staff. Especial attention is called to the necessity of promptly notifying the Secretary of the Committee on Accredited Schools of changes in the dates of examinations and vacations. The list of accredited schools will be found at the end of this section.

GRADUATES OF THE STATE NORMAL SCHOOLS.

The certified standing of any student in the regular courses of the Normal schools of this state will be accepted for entrance to the University in place of an examination in the subjects covered by the certificate.

The University offers a course designed especially for Normal school graduates, leading to the degree of Bachelor of Philosophy. This course includes advanced instruction in education and those studies in history, languages, and science, both required and elective, which will best fit the student for the successful conduct of his chosen profession. To this course graduates of the advanced courses of the Normal schools will be admitted with the rank of junior on the presentation of their diplomas.

Graduates of the Normal schools who desire to become candidates for the degree of Bachelor of Arts will be given credits towards that degree as follows:—

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a. All graduates of the advanced courses in a Wisconsin Normal school shall receive a credit of 30 unit hours, provided, that before entering the advanced course of the Normal school, they have had the full equivalent of a four-year standard high school course.

b. A graduate of the advanced course who, before entering a Normal school, has completed the full equivalent of the preparatory course in an accredited high school, including at least the minimum requirement in foreign language (see p. 58), shall be granted a credit of 36 hours.

c. A graduate who has had the preparatory work specified in *b*, and who, during his course at the Normal school, has selected his studies with special reference to attending the University, may, on application, secure additional credits to an amount not exceeding a total of 45 hours.

d. A student who applies for such additional credit must present a full statement of his work at the Normal school, which will be examined and rated by the Committee on Advanced Standing. The studies presented for a credit under this agreement must be fully equivalent to the corresponding courses in the University. Credit beyond 36 hours will ordinarily be granted only to students who present College work in foreign languages. No credit will be given for any work in the Normal school done in a quarter when more than 20 hours per week were taken; the term "20 hours" being interpreted as including all studies for which any preparation is required outside of the class-room.

STUDENTS FROM OTHER COLLEGES AND UNIVERSITIES.

Students from other institutions, who have pursued standard college courses equivalent to those of the University, will be admitted, and will receive credit for such courses upon the presentation of proper certificates of creditable standing and honorable dismissal.

By arrangement with Lawrence University and Ripon College, students of these institutions who have satisfactorily completed the work of the sophomore year will be admitted to junior rank in the College of Letters and Science. In case of migration at an earlier period than the end of the sophomore year, proportional credit will be given. Students who complete two years of work at Lawrence and Ripon will be admitted to the College of Engineering of the University of Wisconsin on the same con-

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ditions as students who transfer to that college from the College of Letters and Science of the University of Wisconsin. Students of senior rank from Lawrence and Ripon who enter the College of Law will receive credit for their law studies toward graduation in the institution from which they come, to amounts to be determined by those institutions.

Students of other colleges of good standing who have not taken standard courses, but who have studied one year in the college proper, may be admitted to the University provisionally. In such cases the amount of credit will be determined by the Committee on Advanced Standing. The University reserves the right to test by examination the records presented.

No person will be admitted to the University later than November 1st of the year in which he expects to graduate.

ADMISSION OF ADULT SPECIAL STUDENTS.

Persons twenty-one years of age who do not possess all the requirements for admission, and are not candidates for a degree, but wish to take special studies in the College of Letters and Science and the College of Agriculture, are permitted to do so upon giving satisfactory evidence that they are prepared to take the desired studies advantageously. This privilege is granted in the College of Engineering only to such students as are able to meet all of the entrance requirements in mathematics. The privilege is not granted in the College of Law.

Adult special students who desire subsequently to become candidates for a degree must satisfy the regular entrance requirements.

ACCREDITED SCHOOLS.

THE UNIVERSITY LIST.

The accredited schools are arranged in groups in accordance with the grouping of the admission requirements. (Pp. 58-59.)

Group A.

School.	*Principal.*
Aberdeen, So. Dak.,	R. L. KIRK.
Antigo,	W. H. HICKOK.
Appleton,	R. W. PRINGLE.
Ashland,	E. F. MEYER.

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School.	*Principal.*
Aurora, Ill.: East,	C. L. PHELPS.
Aurora, Ill.: West,	C. P. BRIGGS.
Baraboo,	G. W. GEHRAND.
Bayfield,	E. C. GOTHAM.
Beaver Dam,	H. B. HUBBELL.
Beaver Dam: Wayland Academy,	E. P. BROWN.
Beloit,	F. E. CONVERSE.
Belvidere, Ill.: North,	FLORA FELLOWS.
Belvidere, Ill.: South,	O. O. TOWNSEND.
Berlin,	E. T. O'BRIEN.
Bessemer, Mich.,	AMELIA F. OLCOTT.
Black River Falls,	J. E. HALE.
Boone, Ia.,	M. M. BEDDALL.
Boscobel,	M. C. PALMER.
Brodhead,	F. A. HARRISON.
Burlington,	G. A. WORKS.
Burlington, Ia.,	M. RICKER.
Butte, Mont.,	H. M. HART.
Calumet, Mich.,	E. J. HALL.
Cedar Rapids, Ia.,	ABBIE S. ABBOTT.
Charleston, Ill.,	DEWITT ELWOOD.
Cherokee, Ia.,	A. V. STORM.
Chicago, Ill., High Schools:	
Austin,	G. H. ROCKWOOD.
Calumet,	A. S. HALL.
Englewood,	J. E. ARMSTRONG.
Hyde Park,	C. W. FRENCH.
Jefferson,	C. A. COOK.
Lake,	E. F. STEARNS.
Lake View,	B. F. BUCK.
Marshall,	L. J. BLOCK.
McKinley,	G. M. CLAYBERG.
Medill,	E. C. ROSSETER.
North-West Division,	F. P. FISK.
South Chicago,	C. I. PARKER.
South Division,	S. R. SMITH.
Waller,	O. S. WESCOTT.
Chicago, Ill.: Harvard School,	J. J. SCHOBINGER. J. C. GRANT.
Chicago, Ill.: The University High School,	H. H. BELFIELD. W. B. OWEN.

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School.	*Principal.*
Chicago, Ill.: Kenwood Institute,	Stella Dyer Loring. Isabel C. Buckingham.
Chippewa Falls,	S. B. Tobey.
Clinton,	F. J. Lowth.
Clinton, Ia.,	J. S. McCowan.
Colorado Springs, Colo.,	J. R. Richards.
Columbus,	G. E. Bunsa.
Council Bluffs, Ia.,	F. C. Ensign.
Culver, Ind.: Culver Military Academy,	A. F. Fleet.
Cumberland,	J. H. Ames.
Darlington,	R. E. Loveland.
Davenport, Ia.,	W. D. Wells.
Decorah, Ia.,	H. C. Johnson.
De Forest: Windsor Township,	E. C. Meland.
De Kalb, Ill.,	F. M. Giles.
Delafield: St. John's Military Academy,	S. T. Smythe.
Delavan,	I. B. Davies.
Denver, Colo.: District No. 1,	W. H. Smiley.
De Pere,	J. W. Steenis.
Des Moines, Ia.: North,	Amelia Morton.
Des Moines, Ia.: West,	W. A. Crusinberry.
Dillon, Mont.: Beaverhead County,	J. A. Koontz.
Dixon, Ill.,	B. F. Bullard.
Dixon, Ill.: North,	H. V. Baldwin.
Dodgeville,	C. G. Babcock.
Dubuque, Ia.,	F. L. Smart.
Duluth, Minn.,	C. A. Smith.
Eau Claire,	M. S. Frawley.
Edgerton,	W. A. Clark.
Elgin, Ill.,	E. J. Kelsey.
Elkhorn,	T. J. Jones.
Ellsworth,	W. F. Lusk.
Escanaba, Mich.,	Julia M. Rocheford.
Evanston, Ill.; Evanston Township,	H. L. Boltwood.
Evansville,	A. H. Sholtz.
Evansville Seminary,	E. G. Burritt.
Evansville, Ind.,	J. G. Collicott.
Fargo, No. Dak.,	Blanche G. Loveridge.
Faribault, Minn.: Shattuck School,	James Dobbin.
Fond du Lac,	Elizabeth A. Waters.

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School.	*Principal.*
Fond du Lac: Grafton Hall,	B. Talbot Rogers.
Fort Atkinson,	J. A. Hagemann.
Fort Dodge, Ia.,	I. N. Warren.
Freeport, Ill.,	L. A. Fulwider.
Galena, Ill.,	C. C. Emry.
Grand Rapids,	H. S. Youker.
Green Bay: East,	W. O. Brown.
Green Bay: West,	H. H. Hendrickson.
Hancock, Mich.,	M. J. Walsh.
Harvard, Ill.,	R. G. Jones.
Harvey, Ill.: Thornton Township,	J. E. Cable.
Highland Park, Ill.,	W. A. Wilson.
Hillside Home School,	Ellen C. Loyd-Jones. Jane Lloyd-Jones.
Hinsdale, Ill.,	Louise R. Gibbs.
Houghton, Mich.,	J. A. Doelle.
Hudson,	D. L. Hennessey.
Indianapolis, Ind.: Shortridge,	G. W. Benton.
Indianapolis, Ind.: Manual Training High School,	C. E. Emmerich.
Iron Mountain, Mich.,	J. F. Reed.
Ironwood, Mich.,	J. B. Patrick.
Ishpeming, Mich.,	May McKitrick.
Janesville,	H. C. Buell.
Jefferson,	M. M. Muenich.
Joliet, Ill.,	J. S. Brown.
Kankakee, Ill.,	I. E. Neff.
Kaukauna,	A. M. Olson.
Kenilworth, Ill.: New Trier Township,	B. D. Parker.
Kenosha,	W. J. Hocking.
Keokuk, Ia.,	J. Benjamin.
Kokoma, Ind.,	J. Z. A. McCaughan.
La Crosse,	W. R. Hemmenway.
La Grange, Ill.: Lyons Township,	E. R. Cole.
Lake Forest, Ill.: Lake Forest School for Boys,	J. C. Sloane.
Lake Geneva,	H. M. Snow.
Lancaster,	C. E. Slothower.
Lodi,	S. M. W. Thomas.
McGregor, Ia.,	Josephine Harrison.

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School.	*Principal.*
Macon, Mo.: Blees Military Academy,	F. W. V. Blees.
Madison,	J. H. Hutchinson.
Madison: Wisconsin Academy,	Charlotte E. Richmond.
Manitowoc: North,	P. G. W. Keller.
Manitowoc: South,	W. H. Luehr.
Marinette,	C. E. Long.
Marquette, Mich.,	Mary R. Powers.
Marshalltown, Ia.,	W. I. Crane.
Marshfield,	J. B. Borden.
Mason City, Ia.,	Esther L. Bissell.
Mauston,	W. E. Utendorfer.
Mazomanie,	F. G. Kraege.
Medford,	H. F. Arnemann.
Menasha,	John Callahan.
Mendota, Ill.: Blackstone,	Myra J. Howes.
Menominee, Mich.,	W. L. Gerban.
Menomonie,	T. R. Lloyd-Jones.
Merrill,	G. J. Roberts.
Milton Junction,	H. D. Laube.
Mineral Point,	J. F. Bergen.
Milwaukee: East Division,	G. A. Chamberlain.
Milwaukee: South Division,	E. Rissman.
Milwaukee: West Division,	C. E. McLenegan.
Milwaukee Academy,	J. H. Pratt, Jr.
Milwaukee-Downer Col., Seminary Dept.,	Ellen C. Sabin.
Milwaukee: Marquette Academy,	A. J. Burrowes.
Moline, Ill.,	F. A. Thomas.
Mondovi,	J. W. Nesbit.
Monroe,	G. W. Swartz.
Morgan Park, Ill.: Morgan Park Academy,	Wayland Chase.
Necedah,	W. E. Elmer.
Neenah,	E. M. Beeman.
Neillsville,	L. W. Wood.
New Lisbon,	Fred Thomson.
New Richmond,	C. J. Brewer.
Oak Park, Ill.,	J. C. Hanna.
Oconomowoc,	Wm. Kittle.
Oconto,	A. M. Royce.
Omaha, Nebr.,	A. M. Waterhouse.

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School.	*Principal.*
Orchard Lake, Mich.: Michigan Military Academy,	L. C. HULL.
Oregon, Ill.,	CATHARINE KINNISON.
Oshkosh,	A. B. O'NEIL.
Plymouth,	W. B. COLLINS.
Portage,	W. G. CLOUGH.
Poynette,	J. F. POWERS.
Prairie du Chien,	P. A. KOLB.
Quincy, Ill.,	V. K. FROULA.
Racine,	E. W. BLACKHURST.
Racine College: Grammar School,	H. D. ROBINSON.
Reedsburg,	J. B. BALDWIN.
Rensselaer, Ind.,	W. O. HIATT.
Rhinelander,	F. A. LOWELL.
Richland Center,	G. E. PRATT.
Ripon,	E. L. LUTHER.
River Falls,	J. W. T. AMES.
Riverside, Ill.,	E. L. HARDY.
Rockford, Ill.,	E. U. GRAFF.
Rock Island, Ill.,	H. E. BROWN.
Salt Lake City, Utah,	G. A. EATON.
Shawano,	J. LEIDENBERG.
Sheboygan,	A. D. TARNUTZER.
Shullsburg,	H. MURLEY.
Sinsinawa: St. Clara Academy,	DOMINICAN SISTERS.
Sioux City, Ia.,	G. E. MARSHALL.
Sioux Falls, So. Dak.,	A. A. MCDONALD.
South Bend, Ind.,	C. H. BARTLETT.
Sparta,	F. M. JACK.
Spokane, Washington,	H. T. COLEMAN.
Sterling, Ill.: Sterling and Coloma Township,	E. T. AUSTIN.
Stevens Point,	F. F. SHOWERS.
Stoughton,	A. W. WEBER.
Sturgeon Bay,	C. G. STANGEL.
Superior: Blaine,	B. B. JAMES.
Superior: Nelson Dewey,	A. C. SHONG.
Tomah,	C. H. MAXSON.
Two Rivers,	A. A. THOMSON.
Union Grove,	F. W. DUNBAR.

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School.	*Principal.*
Viroqua,	S. E. Pearson.
Washburn,	S. A. Oscar.
Watertown,	W. P. Roseman.
Waukesha,	H. L. Terry.
Waukesha: Carroll College Academy,	W. O. Carrier.
Waupaca,	G. O. Banting.
Waupun,	G. F. Loomis.
Wausau,	C. C. Parlin.
Wauwatosa,	F. M. Merica.
Webster City, Ia.,	L. H. Ford.
West De Pere,	J. V. Brennan.
West Salem,	O. H. Miller.
Whitewater,	C. W. Rittenburg.
Winona, Minn.,	W. A. Bartlett.
Yankton, So. Dak.,	R. C. Shellenbarger.

Group B.

Morrison, Ill.,	E. Alberta Clark.
Red Oak, Ia.,	S. E. Thomas.

Group C.

Mayville,	L. S. Keeley.

Group D.

Algoma,	B. O. Dodge.
Arcadia,	H. A. Snowdon.
Augusta,	W. H. Shephard.
Bangor,	J. J. Neuman.
Barron,	F. H. Swenson.
Brandon,	A. B. Houghton.
Cedarburg,	E. O. Holty.
Chilton,	G. M. Morrissey.
Chippewa Falls: Notre Dame School,	Sister M. Estelle.
Clintonville,	W. E. Switzer.
Colby,	D. A. Swartz.
Deerfield,	O. S. Rice.
Durand,	C. C. Pease.
East Troy,	J. Winden.
Elroy,	W. S. Hake.

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School.	*Principal.*
Fennimore,	E. L. ROETHE.
Florence,	W. T. DARLING.
Fox Lake,	AUGUST GRIMM.
Galesville,	H. C. ALMY.
Gladstone, Mich.,	J. H. MCDONALD.
Glenwood,	O. V. THIELE.
Hartford,	D. C. GILE.
Highland,	H. W. KIRCHER.
Horicon,	F. W. HEIN.
Kewanee, Ill.,	J. B. CLEVELAND.
Kewaunee,	M. MCMAHON.
Lake Mills,	A. B. WEST.
Louisville, Ky.: Manual Training High School,	E. P. CHAPIN.
Marshall,	H. G. PARKINSON.
Montfort,	MILTON ORCHARD.
Negaunee, Mich.,	A. F. STROME.
New London,	W. J. HAMILTON.
Omro,	E. E. SHELDON.
Onalaska,	J. H. JORDON.
Oregon,	FRANKLIN GOULD.
Phillips,	B. W. BRIDGMAN.
Plainfield,	G. E. DAFOE.
Prairie du Sac,	JOHN DIXON.
Rice Lake,	E. C. MCCLELLAND.
Sandwich, Ill.,	W. W. WOODBURY.
Sauk City,	R. A. BRANDT.
Seymour,	F. W. AXLEY.
Sharon,	J. H. STAUFF.
Sheboygan Falls,	A. C. KINGSFORD.
Shell Lake,	W. L. BULLOCK.
Spring Green,	C. N. HILL.
Sun Prairie,	R. J. EDDY.
Tomahawk,	W. H. JAMIESON.
Waterloo,	K. L. HATCH.
West Bend,	C. H. DIETZ.
Weyauwega,	J. J. ENRIGHT.
Wonewoc,	A. L. RHODES.

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Not Accredited for German or French.

School.	*Principal.*
Argyle,	T. WEBSTER.
Black Earth,	L. C. HATCH.
Fairchild,	TAYLOR FRYE.
Juneau,	D. E. MCLANE.
Port Washington,	A. A. BLANDIN.

THE NORTH CENTRAL ASSOCIATION LIST.

Graduates of schools accredited by the North Central Association of Colleges and Secondary Schools, and not in the University list of accredited schools, will be admitted upon the same terms as graduates of schools directly accredited by the University.

This list is revised annually, in April. Graduates of schools that are added after the publication of this catalogue, will have the same privileges as graduates of the schools given in the list below.

The following schools constitute the list by states:

COLORADO: Colorado Springs, Cripple Creek, Greeley, Kenyon City, La Junta, Leadville, Pueblo No. 1, Pueblo No. 20, Trinidad.

ILLINOIS: Aurora, East; Aurora, West; Bloomington; Chicago: Austin, Calumet, Englewood, Hyde Park, Jefferson, John Marshall, Joseph Medill, Lake, Lake View, North West Division, Robert Waller, South Chicago, South Division, William McKinley; Clyde, DeKalb, Dixon South, Elgin, Evanston, Harvey, Joliet, La Grange, Moline, Oak Park, Ottawa, Peoria, Pontiac, Princeton, Rockford, Rock Island, Sterling.

INDIANA: Fort Wayne, Frankfort, Howe Military School, Indianapolis Shortridge; Indianapolis Manual Training; Michigan City, Rensselear.

IOWA: Boone, Cedar Rapids, Council Bluffs, Davenport, West Des Moines, Fort Dodge, Grinnell, Le Mars, Marshalltown, Ottumwa, Sioux City.

MICHIGAN: Ann Arbor, Adrian, Alpena, Bay City, Battle Creek, Calumet, Coldwater; Detroit: Central Eastern, Detroit University School, Detroit Home and Day School; Grand Haven, Grand Rapids, Hancock, Iron Mountain, Kalamazoo, Lansing, Menominee, Marquette, Muskegon, Mt. Clemens, Monroe, Marshall; Saginaw, West Side; St. Joseph; Saginaw, East Side; Traverse City, Ypsilanti.

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MINNESOTA: Duluth; Minneapolis: Central, East Side; St. Paul: Central, Humboldt, Cleveland.

MISSOURI: Blees Military Academy, Columbia; Kansas City: Central Manual Training, Westport; Kirkwood; St. Louis: Central, William McKinley, Washington University Training School.

NEBRASKA: Beatrice, Kearney, Lincoln Academy, Omaha.

OHIO: Akron; Ashtabula; Bellefontaine; Cleveland: Central, East; Coshocton, Dayton, Delaware, East Cleveland, East Liverpool, Elyria, Findlay, Glenville, Greenville, Marion, Mansfield, Mt. Vernon, Piqua, Sandusky, Newark, Toledo, Troy, Van Wert, Xenia, Youngstown, Zanesville.

WISCONSIN: Appleton, Ashland, Chippewa Falls, Eau Claire, Fort Atkinson; Milwaukee, East Division; Milwaukee, West Division; Milwaukee, South Division; Milwaukee-Downer Seminary; Oshkosh, Racine, Janesville, Kenosha, La Crosse, Marinette, Marshfield, Merrill, Sheboygan, Sparta, Stevens Point, Superior, Blaine; Superior, Nelson Dewey; Waukesha, Whitewater.

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FEES AND EXPENSES.

GENERAL REQUIREMENTS.

All fees must be paid at the beginning of each semester, except in the College of Law, where they must be paid at the beginning of the academic year. Until this has been done, cards entitling the student to admission to classes will not be issued.

Graduate students pay the same fees as undergraduates, whether they are in attendance at the University, or are studying *in absentia;* but all fellows and University scholars are exempt from the non-resident tuition fee, and honorary fellows are exempt from both the non-resident and incidental fees.

All men students of the University are required to pay a gymnasium fee of one dollar per semester, except Short and Dairy Course students in Agriculture, who pay seventy-five cents.

Tuition is free for all students from the State of Wisconsin, except in the College of Law. No fees are returned except by special action of the Regents.

Beginning with the academic year 1905-06, an additional fee of one dollar must be paid by students who register after the prescribed registration days. See Calendar, p. 7.

TUITION AND FEES.

College of Letters and Science.

Resident tuition	FREE.
Non-resident tuition, per semester	$15 00
Incidental fee for all students, per semester	10 00
Gymnasium fee for all men students, per semester	1 00
Additional fee for students electing studies in the College of Law, per semester hour	3.00

College of Engineering and Course in Pharmacy.

Resident tuition	FREE.
Non-resident tuition, per semester	$20 00
Incidental fee for all students, per semester	15 00

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Gymnasium fee for all men students, per semester	1 00

College of Agriculture.

Resident tuition	FREE.
Long Course, non-resident tuition, per semester	$15 00
Incidental fee for all Long Course students, per semester	10 00
Incidental fee for all Short and Dairy Course students, per term	5 00
Tuition fee for non-resident Short and Dairy Course students per term	15 00
Lecture fee for non-resident Short and Dairy Course students, per term	10 00
Gymnasium fee for Long Course students, per semester	1 00
Gymnasium fee for Short and Dairy Course students, per semester	75
Farmers' Course, resident tuition	FREE
Farmers' Course, non-resident tuition	$5 00
Farmers' Course, non-resident incidental fee	5 00

College of Law.

Tuition fee, first year	$ 75 00
Tuition fee, second year	50 00
Tuition fee, third year	25 00
Gymnasium fee, per semester	1 00
Graduate fees	50 00
Tuition fee for students graduating in one year.	100 00

The fees for students graduating in two years are the same as for the first two years of the three-year course.

The fee for a single semester of any year is sixty per cent. of the entire fee for that year.

The fee for students in other colleges of the University who elect law studies is $3 per semester hour.

There is no additional fee for non-resident students in this college.

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Summer Session of the College of Letters and Science, and Summer Session for Apprentices and Artisans.

General fee $15 00

Summer School of Library Science.

Resident tuition ..... FREE.
Non-resident tuition $20 00

School of Music.

Persons who are members of other colleges of the University may take the general courses in music without charge. Members of the School of Music and other departments, who take special lessons, will pay fees as stated in the announcement of the school on a subsequent page of this catalogue.

FEES FROM CANDIDATES FOR HIGHER DEGREES.

From all candidates for advanced degrees a diploma fee of $5 is required, payable to the Secretary of the Regents one month before Commencement, and no diploma will be made out until such fee has been paid. If for any reason the degree is not conferred the fee will be returned.

Each candidate for the degree of Doctor of Philosophy must deposit in the University library one hundred printed copies of his thesis. If the thesis is printed in a journal or as a bulletin of the University, reprints therefrom will be accepted by the library, but these must be provided with a special cover in proper thesis form. The candidate may receive his diploma before the thesis is printed, provided a written or typewritten copy of the thesis is deposited with the Librarian, and the sum of $50 with the Secretary of the Regents. The money will be returned on presentation to the library of the required number of printed copies of the thesis.

LABORATORY FEES.

BIOLOGICAL LABORATORIES.—The laboratory fee for the elementary course in biology and for most of the advanced courses is $8 per year. The fee for comparative anatomy is $5 a semester; for histology and embryology $10 a semester. The fees for human anatomy are: osteology, $2; dissection, $10 per part dissected. There is also a breakage fee of $2.50 a semester. The fee for bacteriology is $1.50 for each unit hour of credit.

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CHEMICAL LABORATORIES.—In these laboratories the deposit is from $15 to $25, depending upon the amount of work taken. The amount refunded will depend on the chemicals used and the care exercised by the student.

GEOLOGY AND MINERALOGY.—Blowpipe analysis, per semester, $6; blowpipe analysis, two-fifths study, $4; three-fifths study, $6; petrography, per semester, $6.

PHYSICAL LABORATORIES.—The laboratory fee in the physical laboratories is $2 for each unit-hour (two hours per week of actual work) per semester.

PSYCHOLOGICAL LABORATORY.—The laboratory fee for the course in experimental psychology is $3; for other experimental work $3 per semester, or $5 per year.

COLLEGE OF MECHANICS AND ENGINEERING.—The charge for laboratory work is $2 per unit-hour (two hours per week of actual work) per semester. There is also a charge of $1 per year for periodicals, supplied to the engineering reading room.

COURSE IN PHARMACY.—For general laboratory privileges a charge is made of $1 per unit-hour and semester. A separate account will be kept with the accountant of the storage room for special apparatus and material. The student will purchase coupons from the Secretary of the Regents ($5 at a time) and present them at the storage room. At the end of the year full credit will be given for such pieces of apparatus as are taken back, in accordance with the rules of the storage room.

COLLEGE OF AGRICULTURE.—The fees required of graduate and long course students in the several laboratories are: Chemistry, $1 per unit-hour per semester, with a minimum refundable breakage deposit of $2.50; bacteriology, $1.50 per unit-hour per semester, with a refundable breakage deposit of $2.50; dairy, $1 per unit-hour per semester, with a refundable breakage deposit of $2.50; agricultural engineering, 50 cents per unit-hour per semester, with a minimum refundable breakage deposit of $2.50; agricultural physics and horticulture, each $1 per unit-hour per semester. Resident short course students pay a laboratory fee of $2. Non-resident short course students pay a laboratory fee of $12. All short course students make a refundable key and breakage deposit of $2. Residents in the winter dairy course pay a laboratory fee of $10, and in the summer course $5. Non-residents in the winter dairy course pay a laboratory fee of $20, and in the summer course $15. All dairy course students pay a refundable key and breakage deposit of $2.

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GYMNASIUM PRACTICE AND MILITARY DRILL.

Young Men in the College of Letters and Science, College of Mechanics and Engineering, and the four-year courses in agriculture and pharmacy, are required to take gymnastic exercises during the first two years of their course, and are also required to take military drill. Students required to drill must provide themselves with a uniform, of color and pattern required by the Regents, the cost of which is about $15.

Gymnasium fee, per semester	$1 00
Locker fee, per year	1 50

Young women are required to take gymnastic exercises during the first two years of their course. A gymnasium fee of $1 per year is required, and $1 additional from those who make use of a locker. They must also provide themselves with a suitable costume, directions for which will be found on a subsequent page under the head of Physical Training.

CHADBOURNE HALL.

The price of rooms in Chadbourne Hall varies from $40 to $95 a year, according to location. A circular giving detailed information may be obtained by addressing the Secretary of the Regents.

Application for rooms in the Hall may be made at any time to the Secretary of the Regents, and must always be accompanied by a deposit of $10.

Rooms are assigned after August 1st by the Mistress of the Hall in the order of application; but a person occupying a room may retain it the succeeding year by making application on or before May 1st. The deposit of $10 required from all students, new as well as old, when making application, will be credited on the rent of the room, if taken, but if not taken it will be forfeited, unless notification is received by the Secretary of the Regents prior to August 1st. The balance due for rent must be paid to the Secretary, not later than the second week after the beginning of each semester.

If for any reason one of the occupants of a suite shall be obliged to give up her place in the suite, the remaining person may be required to take a single room, if one is vacant, or pay the price for the full suite during the time it is occupied by her alone.

A person entering the Hall for the second semester only shall

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pay the price of the room charged for the second semester, with the additional sum of $10.

The rooms of Chadbourne Hall are carpeted and furnished, but occupants are expected to provide washstand furniture, towels, napkin rings, sheets, pillow cases, counterpanes, and blankets.

At present the cost of board in Chadbourne Hall is $3.50 a week. Any commutation of charges for board in cases where students leave before the close of the semester, except in case of necessity, is entirely voluntary with the matron in charge.

Chadbourne Hall has accommodations for one hundred women students. It is lighted by electricity, and the heating apparatus is connected with the central heating plant, so that the danger from fire is minimized. Elevators operated by electricity connect the several floors.

The young women that occupy this building are under the immediate charge of the Mistress of the Hall; they must board in the Hall, and are expected cheerfully to conform to the requirements necessary for a family of students.

An account of the women's gymnasium in Chadbourne Hall may be found under the heading Physical Training. (See Index.)

ROOMS AND BOARD.

Rooms, furnished and unfurnished, can be obtained in the city at prices per week ranging from $1 to $4 a person. The cost of board in clubs is from $2.50 to $3 a week; in private families from $3 to $4 a week. Many students obtain rooms or board in families or clubs by rendering service; but these places are eagerly sought for, and cannot always be obtained at once. Those dependent upon themselves for support should not come to the University unless they have a reasonable reserve fund.

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DEGREES.

FIRST DEGREES.

The following baccalaureate degrees are conferred upon those who have successfully completed the prescribed courses of study, and who have complied with all other requirements of the University:—

Academic.

BACHELOR OF ARTS, upon the graduates in the College of Letters and Science, except those from the course for Normal school graduates, and from the course in Pharmacy.

BACHELOR OF PHILOSOPHY, upon the graduates from the course for Normal school graduates.

Professional and Technical.

BACHELOR OF LAWS.

BACHELOR OF SCIENCE IN AGRICULTURE.

BACHELOR OF SCIENCE, CIVIL ENGINEERING COURSE.

BACHELOR OF SCIENCE, SANITARY ENGINEERING COURSE.

BACHELOR OF SCIENCE, MECHANICAL ENGINEERING COURSE.

BACHELOR OF SCIENCE, ELECTRICAL ENGINEERING COURSE.

BACHELOR OF SCIENCE, GENERAL ENGINEERING COURSE.

BACHELOR OF SCIENCE, APPLIED ELECTROCHEMISTRY COURSE.

BACHELOR OF SCIENCE, PHARMACY COURSE, upon graduates of the four-year course in Pharmacy.

GRADUATE IN PHARMACY, upon graduates from the two-year course in Pharmacy.

A graduate of any of the courses may receive the baccalaureate degree of any other course by completing the additional studies required in that course. But two baccalaureate degrees cannot be taken in one year, and for a second bachelor's degree in the College of Letters and Science there are required one year's additional study and a special thesis.

The conditions on which the bachelor's degrees are given will be found stated under the appropriate colleges and courses on subsequent pages.

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HIGHER DEGREES.

The highest degree that the University confers in course is that of *Doctor of Philosophy*. The degree of *Master of Arts* is conferred as a second degree upon candidates who have the degree of *Bachelor of Arts* or an equivalent, and the degree of *Master of Science* upon candidates who have the degree of *Bachelor of Science*. Candidates who have the degree of *Bachelor of Science* in one of the engineering courses may receive the degree of *Civil Engineer*, *Mechanical Engineer*, or *Electrical Engineer*. The degree of *Master of Pharmacy* is conferred as a second degree upon *Graduates in Pharmacy*.

The conditions on which these higher degrees are granted will be found stated under the Graduate School, p. 357, and also under the various colleges.

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THE COLLEGE OF LETTERS AND SCIENCE.

STAFF OF INSTRUCTION.

CHARLES R. VAN HISE, Ph., D., LL. D., President of the University.
E. A. BIRGE, Ph. D., Sc. D., LL. D., Dean, and Professor of Zoology.

T. S. ADAMS, Ph. D., Assistant Professor of Political Economy.
*C. E. ALLEN, Ph. D., Assistant Professor of Botany.
C. R. BARDEEN, M. D., Professor of Anatomy.
A. C. L. BROWN, Ph. D., Assistant Professor of English.
D. E. BURCHELL, A. B., Assistant Professor of Business Administration.
W. B. CAIRNS, Ph. D., Assistant Professor of American Literature.
VICTOR COFFIN, Ph. D., Assistant Professor of European History.
J. R. COMMONS, A. M., Professor of Political Economy.
†G. C. COMSTOCK, Ph. B., LL. B., Professor of Astronomy.
C. A. CURTIS, A. B., Professor of Military Science and Tactics.
W. W. DANIELLS, M. S., Sc. D., Professor of Chemistry.
R. E. N. DODGE, M. A., Assistant Professor of English.
L. W. DOWLING, Ph. D., Assistant Professor of Mathematics.
R. T. ELY, Ph. D., LL. D., Professor of Political Economy.
N. M. FENNEMAN, Ph. D. Professor of General and Physiographic Geology.
RICHARD FISCHER, Ph. C., Ph. D., Assistant Professor of the Theory and Practice of Pharmacy.
C. R. FISH, Ph. D., Assistant Professor of American History.
G. C. FISKE, Ph. D., Assistant Professor of Latin.
D. B. FRANKENBURGER, A. M., LL. B., Professor of Rhetoric and Oratory.
J. C. FREEMAN, LL. D., Professor of English Literature.
W. D. FROST, Ph. D., Assistant Professor of Bacteriology.
LUCY M. GAY, B. L., Assistant Professor of French.
W. F. GIESE, A. M., Associate Professor of Romance Languages.
R. A. HARPER, Ph. D., Professor of Botany.
H. W. HILLYER, Ph. D., Assistant Professor of Organic Chemistry.

*On leave of absence for the academic year 1904-05.
†On leave of absence for the second semester, 1904-05.

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W. H. Hobbs, Ph. D., Professor of Mineralogy and Petrology.

A. R. Hohlfeld, Ph. D., Professor of German.

F. G. Hubbard, Ph. D., Professor of the English Language.

Caroline L. Hunt, A. B., Professor of Home Economics.

Joseph Jastrow, Ph. D., Professor of Psychology.

Louis Kahlenberg, Ph. D., Professor of Physical Chemistry.

Alexander Kerr, A. M., Professor of the Greek Language and Literature.

Edward Kremers, Ph. G., Ph. D., Professor of Pharmaceutical Chemistry.

A. G. Laird, Ph. D., Assistant Professor of Ancient Languages.

H. B. Lathrop, A. B., Associate Professor of English Literature.

C. K. Leith, Ph. D., Professor of Economic and Structural Geology.

Victor Lenher, Ph. D., Associate Professor of Chemistry.

W. S. Marshall, Ph. D., Assistant Professor of Zoology.

Abby S. Mayhew, Assistant Professor of Physical Culture.

C. E. Mendenhall, Ph. D., Associate Professor of Physics.

*B. H. Meyer, Ph. D., Professor of Political Economy.

Jessie M. Meyer, B. S., Mistress of Chadbourne Hall.

W. S. Miller, M. D., Associate Professor of Anatomy.

D. C. Munro, A. M., Professor of European History.

J. E. Olson, B. L., Professor of the Scandinavian Languages and Literature.

M. V. O'Shea, B. L., Professor of the Science and Art of Education.

E. T. Owen, Ph. D., Professor of the French Language and Literature.

Ettore Pais, LL. D., Non-resident Lecturer in History.

F. A. Parker, Professor of Music.

J. B. Parkinson, A. M., Professor of Constitutional and International Law.

J. F. A. Pyre, Ph. D., Assistant Professor of English Literature.

P. S. Reinsch, Ph. D., Professor of Political Science.

†E. C. L. C. Roedder, Ph. D., Assistant Professor of German Philology.

W. A. Scott, Ph. D., Professor of Political Economy.

F. C. Sharp, Ph. D., Associate Professor of Philosophy.

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*On leave of absence for the academic year 1904-05.
†On leave of absence for the second semester, 1904-05.

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*Grant Showerman, Ph. D., Assistant Professor of Latin.
E. B. Skinner, Ph. D., Assistant Professor of Mathematics.
M. S. Slaughter, Ph. D., Professor of Latin.
C. S. Slichter, M. S., Professor of Applied Mathematics.
*C. F. Smith, Ph. D., Professor of Greek and Classical Philology.
B. W. Snow, Ph. D., Professor of Physics.
†S. E. Sparling, Ph. D., Assistant Professor of Political Science.
Susan A. Sterling, M. L., Assistant Professor of German.
A. W. Tressler, A. B., Inspector of Schools.
Augustus Trowbridge, Ph. D., Professor of Mathematical Physics.
F. J. Turner, Ph. D., Professor of American History.
C. A. Van Velzer, Ph. D., Professor of Mathematics.
E. K. J. H. Voss, Ph. D., Professor of German Philology.
W. H. Williams, A. B., Professor of Hebrew and Hellenistic Greek.

Philip Adams, B. A., Instructor in English.
B. M. Allen, Ph. D., Instructor in Comparative Anatomy.
Florence E. Allen, M. L., Instructor in Mathematics.
Katherine Allen, Ph. D., Instructor in Latin.
H. W. Allinger, A. B., Assistant in German.
A. R. Anderson, Ph. D., Instructor in Greek.
W. B. Anderson, M. S., Assistant in Physics.
M. F. Angell, B. S., Assistant in Physics.
J. D. Barnett, A. B., Assistant in Political Science.
Arthur Beatty, Ph. D., Instructor in English.
R. C. Benner, B. S., Instructor in Chemistry.
E. S. Bishop, B. L., Assistant in Physics.
Eliot Blackwelder, A. B., Instructor in Geology.
W. G. Bleyer, Ph. D., Instructor in English.
Eliot Boardman, A. B., Assistant in French.
B. H. Bode, Ph. D., Instructor in Philosophy.
F. P. Boswell, Ph. D., Assistant in Psychology.
I. W. Brandel, M. S., Instructor in Pharmaceutical Technique.
E. A. Bredin, Instructor in Music.
A. B. Coffey, M. A., Resident Lecturer in Education.
A. L. Colton, M. A., Instructor in Physics.
E. A. Cook, B. L., Instructor in English.

*On leave of absence for the academic year 1904-05.
†On leave of absence for the second semester, 1904-05.

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C. C. CRAWFORD, M. A., Assistant in History.
R. H. DENNISTON, Ph. D., Instructor in Pharmaceutical Botany.
T. H. DICKINSON, M. A., Instructor in English.
JEROME DOWD, M. A., Resident Lecturer in Sociology.
A. G. DU MEZ, Ph. G., Laboratory Assistant in Pharmacy.
M. B. EVANS, Ph. D., Instructor in German.
P. J. GENTNER, M. A., Instructor in English.
S. W. GILMAN, LL. B., Assistant in Commerce.
S. H. GOODNIGHT, M. A., Assistant in German.
M. H. HAERTEL, Ph. B., Assistant in German.
C. H. HANDSCHIN, Ph. D., Instructor in German.
J. F. HAUSSMANN, M. A., Assistant in German.
SABENA M. HERFURTH, M. L. Assistant in German.
H. C. HOCKETT, B. L., Assistant in History.
J. G. HOLTY, B. S., Assistant in Chemistry.
W. O. HOTCHKISS, B. S., Instructor in Geology.
ELLEN A. HUNTINGTON, A. B., Instructor in Home Economics.
E. B. HUTCHINS, JR., M. S., Assistant in Analytical Chemistry.
F. T. KELLY, Ph. D., Instructor in Hebrew and Hellenistic Greek.
G. I. KEMMERER, A. B., Assistant in Chemistry.
H. S. KNIGHT, A. B., Instructor in Hellenistic Greek.
MARION B. LAMONT, Instructor in Elocution.
M. O. LORENZ, A. B., Instructor in Political Economy.
J. H. MATHEWS, B. S., Assistant in Physical Chemistry.
R. B. MACNISH, B. L., Instructor in French.
ANNE H. MCNEIL, Ph. M., Assistant in Education.
F. W. MEISNEST, Ph. D., Instructor in German.
L. F. MILLER, M. A., Instructor in Physics.
GEORGIANA L. MORRILL, Ph. D., Instructor in English.
H. B. NORTH, B. S., Assistant in Chemistry.
G. N. NORTHROP, A. B., Instructor in English.
E. L. NORTON, Ph. D., Instructor in Philosophy.
M. B. OLBRICH, LL. B., Instructor in Rhetoric and Oratory.
E. W. OLIVE, Ph. D., Resident Lecturer in Botany.
J. B. OVERTON, Ph. D., Instructor in Botany.
H. E. PATTEN, Ph. D., Instructor in Chemistry.
OTTO PATZER, M. L., Instructor in French.
W. M. PERSONS, B. S., Instructor in Mathematics.
U. B. PHILLIPS, Ph. D., Instructor in History.
FRANK RABAK, Ph. G., Assistant in Plant Chemistry and Pharmaceutical Chemistry.

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ARTHUR RANUM, A. B., Instructor in Mathematics.
B. M. RASTALL, M. A., Assistant in Mathematics.
G. M. REED, M. A., Assistant in Botany.
AMY A. ROBINSON, B. A., Assistant in German.
E. B. SCHLATTER, M. A., Instructor in French.
FERDINAND SCHMITTER, A. B., M. D., Instructor in Anatomy.
G. C. SELLERY, Ph. D., Instructor in European History.
A. R. SEYMOUR, M. L., Instructor in French.
HELEN SHERMAN, B. S., Laboratory Assistant in Botany.
F. L. SHINN, A. M., Assistant in Physical Chemistry.
C. N. SMILEY, JR., M. A., Instructor in Latin.
J. D. SUTER, B. A., Student Assistant in Mathematics.
A. H. TAYLOR, B. S., Instructor in Physics.
H. C. TAYLOR, Ph. D., Instructor in Political Economy.
E. M. TERRY, M. A., Instructor in Physics.
C. A. TIBBALS, JR., B. A., Instructor in Chemistry and Assaying.
A. C. TILTON, Ph. D., Instructor in European History.
J. E. TUTHILL, M. A., Assistant in European History.
M. E. TWEEDEN, Ph. G., Assistant in Practical Pharmacy.
ELSBETH VEERHUSEN, Ph. D., Instructor in German.
C. T. VORHIES, B. S., Assistant in Zoology.
GEORGE WAGNER, M. A., Instructor in Zoology.
R. M. WERNAER, Ph. D., LL. B., Instructor in German.
R. A. WETZEL, B. S., Assistant in Physics.
H. C. WOLFF, M. S., Instructor in Mathematics.
A. G. WORTHING, B. A., Assistant in Physics.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS.

1. General Conditions.

The unit-hour is the standard for computing the amount of work required for graduation. This is equal to one hour of recitation or lecture per week for one semester. Two hours of laboratory work or two hours regularly prescribed military drill or physical exercise in the gymnasium are credited as one unit-hour. Students are expected to take 15 hours per week in recitations, lectures, and laboratory work, making 30 unit-hours per year, and 120 for the course. In addition two hours per week (one unit-hour per semester) of gymnastics are required during the first two years, making a total of four unit-hours. The men are required to drill two hours per week during the first two years, giving a credit of four unit-hours. The total requirements for class-room

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work, military drill, and the gymnasium are, therefore, 128 unit hours for the men, and 124 for the women.

Students excused from drill or gymnastics are required either to make up the work before graduation, or if the excuse is based on permanent incapacity, to make good the requirement by work in other departments.

No student will be permitted to receive a credit toward graduation of more than eighteen unit-hours in one semester in regular studies except by permission of the Faculty, obtained in advance.

2. Required Studies.

a. English, 6 unit-hours (3 hours per week for two semesters); to be taken in the first year of residence.

b. Language: 16 unit hours for those who offer four years or more of language at entrance; 24 unit-hours for those who offer less than four years of language at entrance. The work shall be in year courses in two languages, which must be chosen from the following group: Greek, Latin, French, German.

Advanced work in another foreign language may be substituted in part fulfillment of this requirement, the amount thus substituted not to exceed 8 unit hours. Thus, if the student desires to take Norse or Hebrew, for example, as one of the required languages, he may do so on the following conditions:
(1.) He must study the language more than one year. (2.) The work beyond the first year ("advanced work") is that to be substituted. (3.) Not more than 8 hours of this language may be so used. The remainder of the required language must be in one of the four languages named above. By "Greek" is understood classical Greek.

c. Two of the following: Natural Science, 10 unit-hours; Mathematics, 6 unit-hours; History, 6 unit-hours.

Under natural science are included biology, chemistry, physics, and geology. The latter science cannot be taken in the freshman year; the others may be so elected. All are five-hour courses with laboratory work, or field work in geology.

3. Major Study and Thesis.

Major Study.—At the beginning of the sophomore or the junior year, every candidate for the degree of Bachelor of Arts shall select as his major subject the work of some one department in the College of Letters and Science. This department will determine the manner in which the work of the major shall be completed; the work required in the major (including thesis and required work) shall not be less than 20 hours, nor more than 40 hours; the credit for the thesis being four hours.

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Thesis.—All condidates for a baccalaureate degree are required to present a graduating thesis, the subject of which must be approved by the student adviser and the professor at the head of the department in which the candidate is doing the work represented by the thesis. The thesis must represent some phase of the student's work in his major study, and must have the character of a scholarly dissertation on the subject. The thesis must be typewritten on paper of good quality, 8x10 inches in size, and must be bound according to specifications furnished by the Librarian of the University. It must be deposited in the University Library by June 1st.

Before the thesis is accepted, it must be approved by the instructor under whom the work has been done, and by the head of the department. When accepted, the thesis becomes the property of the University.

4. Electives.

All work not included in 2 and 3 is elective, but there shall not be taken in any one department more than 40 hours, including required work in excess of 6 hours, major and electives. However, high school work for which university credit is given shall not count as a part of these 40 hours.

5. Studies of the Freshman Year.

In this year one study only is absolutely required: English, course 1, three hours per week. All the other studies of the year must be chosen from the following groups:

GROUP I. At least one subject must be taken from this group and not more than 10 unit-hours may be chosen from any one subject.

Greek: 5 or 3 hours per week.

Latin: 5 or 3 hours per week.

German: 4 hours per week.

French: 4 hours per week.

Spanish: 4 hours per week (in the Course in Commerce).

GROUP II. At least one subject must be chosen from this group. Not more than 10 unit-hours can be taken in any one subject.

Mathematics:

Algebra: 3 hours, one semester.

Trigonometry: 3 hours, one semester.

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These courses in Mathematics are repeated each semester.

Science:

Biology: 5 hours.
Chemistry: 5 hours.
Physics: 5 hours.
Astronomy: 3 hours, one semester.
Physiography of the United States: 3 hours, one semester.
Physical Geography: 3 hours, one semester.

History:

Ancient History: 3 hours.
English History: 2 or 3 hours.
Medieval History: 3 hours.
American History: 2 hours.

The student may take 14, 15, or 16 hours from these studies. The combination may be made by adding to English (3 hours) two foreign languages from Group I (6 to 10 hours), with one subject from Group II (3 to 5 hours); or by taking but one foreign language (3 to 5 hours) with two subjects from Group II (6 to 10 hours). Students are advised to carry on the language, or languages, which they have had in preparatory school. Those who come with a language preparation consisting only of two years of German will be expected to continue that subject during the freshman year.

The following courses which are open to freshmen will be found described under Departments of Study on the following pages. The figures following the name of the department refer to the number of the course as given under the proper heading under Departments of Study.

English 1, Greek A, Greek 1, Latin A, Latin 1 and 2, French 1 and 2, German 1, 2, 2a, Mathematics 1 and 2, History 1, 2a, 2b, 3, 5c, Biology 1, Chemistry 1, Physics 1, Astronomy 1. The last named course cannot constitute a part of the required science.

ELECTION OF STUDIES IN OTHER COLLEGES.

Candidates for the degree of Bachelor of Arts are allowed to elect in the College of Mechanics and Engineering, the College of Law, the College of Agriculture, the Course in Pharmacy, the Course in Commerce, the Course in Music, or the Course in Home Economics, certain studies enumerated below to an amount not to exceed the equivalent of twenty unit-hours. This privilege will

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not be extended to Normal graduates attempting to graduate in two years, nor to undergraduates of other colleges who enter this University with the rank of seniors.

When approved by the Dean of the College of Engineering, an additional election of six hours is permitted in the case of students who propose to proceed to the degree of Bachelor of Science, Civil Engineering.

In the application of the twenty-hour rule, above set forth, candidates for the degree of Bachelor of Arts, with the exception of seniors taking law studies, are not allowed to elect more than five of the twenty hours in any one semester. Studies in the College of Law may be elected only by seniors.

The following studies may be elected:

In the College of Engineering:

Mechanical Drawing, courses 1, 2, and 3.
Applied Mechanics, 1, 2, 3, 4, and 5.
The Materials of Construction, 1, 2, and 3.
Topographic and Geodetic Engineering, 1, 2, 3, 4, 5, and 6; also 9 and 10.
Railway Engineering, 5.
Hydraulic Engineering, 1 and 3.
Structural Engineering, 1, 2, and 5.
Municipal and Sanitary Engineering, 1, 2, and 4.
Steam Engineering, 3, 4, and 5.
Mechanical Laboratory, 1 and 2.
Machine Design, 1, 3, 4, and 8.
Applied Electromagnetism and the Construction of Dynamos, 1 and 2.
Alternating Currents and Alternating-current Machinery, 1, 2, 3, 4, 5, and 6.
Applied Electrochemistry and Electrometallurgy, 1, 2, 3, and 5.
Electric Installations, 4 and 10.

In the College of Law:

Contracts.
Commercial Paper.
Real Property.
Torts.
Private Corporations.

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Constitutional Law.
Wills.
Banking.
Domestic Relations.
Common Law Pleading.
Equity.
Evidence.
Agency.
Public Service Companies.

The law courses in italics may be taken only after suitable preliminary studies. Applications for these advanced studies must be made to the committee in charge, consisting of the Dean of the College of Law and Professor Reinsch.

In the College of Agriculture:
Agricultural Chemistry, 1 and 3.
Agricultural Physics, 1 and 3.
Horticulture, 1.

In the Course in Commerce:
All courses except the one in Business Administration, which can only be taken in addition to the required 120 units, by students of suitable preparation.

In the Course in Pharmacy:
All courses except Pharmacognosy under botany and the courses in the department of Pharmacy.

In the Course in Music:
Courses 2 to 8, inclusive.

In the Course in Home Economics:
Courses 1 and 3.

REQUIREMENTS FOR A DEGREE IN THE COURSE IN COMMERCE.

Students who have completed the regular four years' course of the Course in Commerce described on p. 193, will receive the degree of *Bachelor of Arts.*

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE.

Students who have completed the regular four years' course of the Course in Pharmacy, described on p. 203, will receive the degree of *Bachelor of Science, Pharmacy Course.*

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REQUIREMENTS FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Course for Normal School Graduates.

Graduates of the advanced courses of the Normal schools of the State are admitted to advanced standing in the College of Letters and Science on conditions which may be found on page 69 of this catalogue. The following special course for Normal graduates has been arranged, leading in two years to the degree of *Bachelor of Philosophy*. The course contains a minimum required amount of advanced studies in philosophy and education, with opportunity for further elections in those subjects. It requires also a continuous study of foreign language during the two years of the course. In other directions the student may elect his studies. It is expected that the Normal graduate will give especial attention to fitting himself for teaching in one or two of the main lines of instruction, and the requirements and electives have been so arranged as to permit him to attain this end. He may devote himself especially to science, to literature, to history, or to any combination of these studies. He will be required, however, to make one of these lines of study his major work, and will not be permitted to elect a large number of short, scattered courses of instruction, since it is the especial design of this course to enlarge and complete his knowledge in certain definite directions.

The attention of the student is called to the necessity of planning his course from the beginning so as to satisfy the requirements for a thesis.

Junior Year: Latin, French, or German 4; philosophy 3; advanced education 3; language, history, English, advanced mathematics, or science 5; electives 3 to 5: 18 hours per week required.

Senior Year: Continuation of Latin, French, or German 4; electives 12; thesis 2: 18 hours per week required.

Any member of the course who offers work in foreign language equal in amount to that required of candidates for the degree of Bachelor of Arts, will not be required to pursue courses in foreign language in the University; and no student in this course will be required to do more work in foreign language than is demanded for the degree of Bachelor of Arts.

GRADUATION IN LESS THAN FOUR YEARS.

The attention of students is called to the announcement of the Summer Session of the University, as given on subsequent pages

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of the Catalogue. Work in the Summer Session will be credited in the same way as work in the regular session of the University, and by attendance at one session a total amount of credit may be acquired not exceeding six unit-hours.

Candidates for the degree of Bachelor of Arts who desire to graduate in three years may do so by taking 18 hours of recitations per week and by attending three summer sessions. Permission to take work to this amount will be given only to students whose standing in their studies is wholly satisfactory. No credit will be given for repetition in the Summer Session of studies taken in the regular session of the University, or for repeating in the University work done in the summer. Students will need to select carefully their work for the summer with reference to the required and elective studies of the course in which they intend to graduate. The Summer Session offers exceptional opportunities for the preparation of a senior thesis. Any student who expects to shorten his course by means of the Summer Session should consult his class adviser in selecting his studies.

STUDENT ADVISERS.

Upon entrance, each student in the College of Letters and Science is assigned to a member of the Faculty who acts as his adviser during the freshman and sophomore years. At the beginning of the junior year, at which time, if not before, the student selects his major study, a professor in the department in which his major is chosen becomes his adviser. Each semester, the student is required to consult his adviser concerning the choice of studies, and the adviser must give his approval before the student is permitted to enter classes.

DIPLOMAS AS STATE CERTIFICATES.

A law enacted by the legislature of 1901 states:

"A diploma granted upon the completion of a regular collegiate course of the University of Wisconsin, if accompanied by a certificate that the bearer has completed the course of pedagogical instruction prescribed by the University for all persons who intend to teach, * * * * upon presentation to the State Superintendent shall entitle the holder to receive from that officer a certificate which shall authorize him to teach in any public school for one year."

Sections 458 *b* and *d* of the Revised Statutes provide that after one year of successful teaching the diploma of a graduate of the University may be countersigned by the State Superintendent, and that when so countersigned the diploma shall have the force and effect given by law to the unlimited state certificate.

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DEPARTMENTS OF INSTRUCTION.

PHILOSOPHY.

PROFESSOR JASTROW, ASSOCIATE PROFESSOR SHARP, DR. BODE, DR. NORTON, AND DR. BOSWELL.

The student is at liberty to begin his work in philosophy with any of the courses designated as primarily for undergraduates. But those who desire to take three hours' work through one year in the department, whether they wish to continue with the subject or not, will ordinarily find it most profitable to select course 1 in the first semester, and either 11, 21, or 41 in the second semester.

The requirements for an undergraduate major in philosophy are a minimum of twenty semester hours, including the thesis. Of these, at least eight hours must be taken from the courses for undergraduates and graduates.

Primarily for Undergraduates.

1. Psychology: Introductory Course. The class will meet three hours weekly in two divisions: *Tu., Th., at* 9, *and Tu., Th., at* 8; *each division will meet at one other hour to be arranged.* The division meeting at 9 o'clock will be in charge of Professor JASTROW; that meeting at 8 o'clock will be in charge of Associate Professor SHARP. The ground covered by the two divisions will be substantially the same. The former, however, will lay greater emphasis upon the sensory processes; the latter, upon the processes of thinking. Professor JASTROW, Associate Professor SHARP, Dr. BODE, and Dr. BOSWELL.

11. Logic. *First semester; M., W. F., at* 9. Dr. NORTON. *Repeated in the second semester; M., W., F., at* 10. Dr. BODE.

12. Applied Logic. A study of the more common fallacies, with training in detecting them: the conditions of proof and the laws of evidence illustrated by practical exercises. Course 11 is not required as a preliminary. *First semester; M., W., F., at* 10. Dr. BODE.

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21. Introduction to Philosophy. A general survey of the principal problems of philosophy. Special attention is given to the following subjects: Materialism and agnosticism in the forms which they have assumed under the influence of modern science; theism; the nature of the external world; the nature of mind. *Second semester; M., W., F., at* 9. Dr. NORTON.

22. German Philosophy as Reflected in German Literature. The philosophical teachings of Lessing, Herder, Goethe, Schiller, the Romanticists, Hebbel, Wagner, and Nietzsche. *First semester; Tu., Th., at* 11. Dr. BODE.

23. The Philosophic Thought of the Nineteenth Century as Reflected in English Literature. A study of Wordsworth, Carlyle, Emerson, Arnold, Tennyson, and Browning. *Second semester; Tu., Th., at* 11. Dr. BODE.

31. History of Greek and Medieval Philosophy. *First semester; M., W., F., at* 8. Dr. NORTON.

32. History of Modern Philosophy. *Second semester; M., W., F., at* 8. Dr. NORTON.

41. Ethics: Introductory Course. *Second semester; Tu., Th., at* 8; *F., at an hour to be determined.* Associate Professor SHARP.

42. Social and Political Ethics. A general study of moral rights, of the rights of personal liberty, freedom of contract, property, conquest, national independence, and suffrage. *First semester; Tu., Th., at* 12. Course 41 is not required as a preliminary. Associate Professor SHARP.

51. Aesthetics. *First semester; Tu., Th., at* 9. Dr. NORTON.

For Undergraduates and Graduates.

2. Advanced Analytic Psychology. *Second semester; Tu., Th., at* 9. Associate Professor SHARP.

4. Experimental Psychology. (*a*) Lectures and demonstrations. *Second semester; M., W., F., at* 9. (*b*) Laboratory practice, parallel with the lectures. *Second semester; four hours a week, at hours to be arranged.* (*a*) and (*b*) together count as a full study. Professor JASTROW.

5. Research in Psychology. *Throughout the year; hours to be arranged.* Professor JASTROW.

6. Comparative Psychology. Lectures and assigned readings

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on animal psychology and mental development in man. *First semester; Tu., Th., at* 10. (Omitted in 1905-06). Professor JASTROW.

7. Abnormal Psychology. Lectures and assigned readings covering the main forms of unusual and abnormal mental phenomena. *Second semester; Tu., Th., at* 10. Professor JASTROW.

8. Anthropology. Lectures and readings. Tyler's *Anthropology. First semester; Tu., Th., at* 10. (Omitted in 1904-05). Professor JASTROW.

9. The Psychology of Language. A survey of the language-processes and their mode of action, as illustrated by the study of language in its growth, in disease, among primitive peoples, in history, and as a logical product. *First semester; M., W., at* 3. Professor JASTROW.

24. The Philosophy of Religion. The conception of God in Christian theology and in modern philosophy; the bearing of evolution upon theism; the existence of ends in nature; the problem of evil. *First semester; Tu., Th., at* 10. Dr. NORTON.

25. The Relation of Man to Nature. The relation of mind and body; the problem of freedom; the influence of the doctrine of evolution upon our conception of man's place in the universe. *Second semester; Tu., Th., at* 10. Dr. BODE.

33. The Philosophy of Plato. Lectures, collateral readings, and papers. *Second semester; Tu., Th., at* 12, *subject to arrangement.* Dr. BOSWELL.

36. The British Philosophers of the Eighteenth Century. Locke, Berkeley, and Hume. *First semester; three times a week.* Dr. BODE.

37. Kant's Critique of Pure Reason. *Second semester; three times a week.* Dr. BODE.

43. Advanced Ethics. The evolution of the moral life. *First semester; twice a week.* Associate Professor SHARP.

44. Advanced Ethics. The growth of moral ideas among the ancient Hebrews, Greeks, and Romans. *Second semester; twice a week.* Associate Professor SHARP.

Primarily for Graduates.

10. Psychological Seminary. *Throughout the year; alternate weeks.*

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39. Contemporary Theories of Metaphysics. *Throughout the year; twice a week.* Associate Professor SHARP.
40. Metaphysical Seminary. *Throughout the year; alternate weeks; W.*, 4 *to* 6.
45. Ethical Seminary. *Throughout the year; alternate weeks; W.*, 4 *to* 6.

EDUCATION.

PROFESSOR O'SHEA, ASSISTANT PROFESSOR TRESSLER, MR. COFFEY, AND DR. BODE.

Primarily for Undergraduates.

1. History of Ancient and Medieval Education. Lectures, reading, and reports. *First semester; M., W., F., at* 9. Mr. COFFEY.
11. Mental Development. The more important of the newer problems relating to the development of the individual, with educational interpretations. *First semester; M., W., F., at* 10. *Repeated in the second semester; M., W., F., at* 11. Professor O'SHEA.
31. History of American Education. The rise and growth of its several institutions, together with the system and polity of administration and support which characterize each. Lectures, assigned readings, and reports. *Second semester; Tu., Th., at* 9. Mr. COFFEY.

For Undergraduates and Graduates.

3. The Herbartian Science of Education. Its relation to contemporaneous and subsequent educational thought. *Second semester; Tu., Th., at* 10. Mr. COFFEY.
4. School Supervision. The making and administration of courses of study; examinations, promotions, inspections, the conduct of teachers' meetings, etc. *Second semester; Tu., Th., at* 9. Assistant Professor TRESSLER.
5. The Philosophy of Education. Lectures, readings, and discussions on the nature, forms, and elements of education, regarded from the standpoint of modern evolutionary psychology. *Second semester; M., W., at* 9. Dr. BODE.
13. Principles of Education. Treated with special reference to the high school. The first half of the course is devoted to

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a study of educational theory in the light of contemporary scientific thought. The second half is devoted to a consideration of practical problems of method and management. *First semester; M., W., F., at* 11. *Repeated in the second semester; M., W., F., at* 10. Professor O'SHEA.

14. Educational Psychology. The psychology of development in some of the principal types of educational work. Both the genetic and statistical methods will be employed, with emphasis on the former. Designed for advanced students in psychology and education. *Throughout the year; W.* 7 *to* 9, P. M. Professor O'SHEA.

15. Modern Educational Movements. Modern movements affecting courses of study, the general character and method of teaching, and school organization and management. *First semester; M. W., at* 12. Professor O'SHEA.

16. Educational Classics. With reference to present problems. Readings in Plato, Aristotle, Plutarch, Quintilian, Montaigne, Locke, Rousseau, Mill, and Spencer. *Second semester; M., W., at* 12. Professor O'SHEA.

18. Adolescence. A study of the more important phenomena of the development of the individual during the adolescent period, with educational interpretations. *Second semester; two hours a week.* Professor O'SHEA.

20. Seminary in Education. The investigation and discussion of current educational problems. Each member is required to undertake a piece of research, and report upon it during the year. Open to those only who have done at least one year's work in education. *Throughout the year; alternate Thursdays,* 7 *to* 9 P. M. Professor O'SHEA.

Students desiring the University Teachers' Certificate must obtain ten hours credit in the following branches: Philosophy 1 (three hours) and Education 1 or 13 (three hours). The remaining four hours must be made up by electives from the following: Philosophy 6, 11; Education, 4, 5, 11, 15, 16, 31; and the teachers' course in those subjects that the student is preparing to teach. These electives are subject to the following conditions: (*a*) The maximum number of credits allowed for the teachers' courses is two hours; (*b*) the maximum in philosophy is five hours, which includes the three hours required above.

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HISTORY.

PROFESSOR TURNER, PROFESSOR MUNRO, PROFESSOR PAIS, ASSISTANT PROFESSOR COFFIN, ASSISTANT PROFESSOR FISH, DR. TILTON, DR. SELLERY, DR. PHILLIPS, AND ASSISTANTS.

Arrangement of Courses.

The courses in history are divided into three groups, as follows:

A. Introductory courses 1 to 9 are primarily for undergraduates, and are planned to afford a comprehensive survey of the general field of history. They cannot be counted toward advanced degrees, and graduates are required to have completed an equivalent of sixteen semester hours of these studies as a preparation for graduate work for a degree. It will be noted that a substantial historical basis can be laid for advanced work by such an election as the following: freshman year, Medieval (course 1) and Colonial (course 3) or English (course 6); sophomore year, Modern (course 2) and United States (course 4). The study of Greek and Roman history (courses 8 and 9) is particularly recommended to those who may intend to teach history. It is recommended that students shall not cover all of the introductory courses to the neglect of advanced work.

B. Advanced courses 11 to 45 are designed to continue the work begun in the preliminary courses in the direction of greater specialization. These courses are open to undergraduates and graduates who have taken the necessary preliminary work.

C. Graduate courses 51 to 60 are not open to undergraduates. They consist of courses in the technique of history, and seminaries in American, Medieval, and Modern history, in which the subject of study changes from year to year.

History Major.

The requirements for an undergraduate major in history, in addition to the thesis, are twenty-six semester hours as a minimum, selected as follows:

I. One or more introductory courses in both European and American history.

II. Advanced courses to the amount of at least ten semester hours.

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For Undergraduates.

1. Medieval History. A general survey of the history of continental Europe from the barbarian invasions to the close of the fifteenth century. Advanced students will be given special quiz sections and more advanced work. *Throughout the year; M., W., at* 11, *for lectures, and a third hour in sections.* Professor MUNRO, Dr. SELLERY, and assistants.

2. Modern European History. A general survey extending from the close of the fifteenth century to the present day. Not open to freshmen. *Throughout the year; Tu., Th., at* 11, *and a third hour in sections. First semester,* Dr. SELLERY; *second semester,* Assistant Professor COFFIN.

3. American Colonial and Revolutionary History. An introduction to the history of the United States, designed to acquaint the student with the beginnings of American institutions. Text-book, lectures, and topics. The class meets in divisions; advanced students will be given a special division. *Throughout the year; Tu., Th., at* 9 *and* 10. Assistant Professor FISH and Dr. PHILLIPS.

4. History of the United States. A general survey from the Revolutionary era to the present, with emphasis upon political history. Lectures, text-book, collateral reading, and topics. Not open to first year students. This course, or an equivalent, must precede all advanced courses in American history.

   To the presidency of Jackson, *first semester;* from the presidency of Jackson to the present, *second semester; M., W., F., at* 11. Assistant Professor FISH.

5. English History. A general survey with especial reference to economic and social conditions. Text-book, lectures, and topics. *Throughout the year; M., W., F., at* 9 *and* 11. Dr. TILTON.

6. English History. A course with especial reference to social and political conditions, useful for students of English literature, and recommended to those who expect to teach history. Students are not permitted to elect both courses 5 and 6. *Throughout the year; Tu., Th., at* 9. Assistant Professor COFFIN, Dr. TILTON, and Dr. SELLERY.

7. History of Europe in the Nineteenth Century, 1815 to 1900. Designed for freshmen in the Course in Commerce.

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Throughout the year; M., W., F., at 11. Assistant Professor COFFIN.

8. Ancient and Greek History. A brief outline of primitive and Oriental history and a general course in Greek history. Recommended to all who expect to teach history. *First semester; Tu., Th., F., at* 11. (Omitted in 1904-05). Professor MUNRO and Dr. TILTON.

9. Roman History. A general survey with especial emphasis on the period of the later Republic and Early Empire. Recommended to all who expect to teach history. *Second semester; Tu., Th., at* 11, *for lectures, and a third hour in sections.* Professor MUNRO and assistants.

For Undergraduates and Graduates.

11. The History of the West. Particular attention is paid to the conditions of westward migration and to the economic, political, and social aspects of the occupation of the various physiographic provinces of the United States, together with the results upon national development. Lectures, collateral reading, and topics. *Throughout the year; M., W., F., at* 12. (Omitted in 1905-06). Professor TURNER.

12. History of the South. The course deals with the period since the Revolution, and especial attention is given to the economic and social forces involved in the plantation system, slavery, and the occupation of the Gulf plains, as a basis for understanding the political history of the South and its place in national history. *Throughout the year; Tu., Th., at* 3. Dr. PHILLIPS.

13. History of New England. A study of the transfer of population from Europe to the New England region, of the forces, social, economic, and political, that acted upon it there, and the expansion westward across the United States and Canada. Special stress will be laid upon development and the social conditions of the New England towns, the process of New England expansion, and the religious and intellectual development of the people. *Throughout the year; Tu., Th., at* 11. Assistant Professor FISH.

14. History of the United States, 1816 to 1837. In this course the relations between economic, social, and political forces are considered; and the characteristics and inter-relations of the various sections of the United States are emphasized.

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The constitutional history of the period is studied as the outgrowth of economic and social conditions in the physiographic provinces that made up the United States. *Throughout the year; M., W., F., at* 12. Professor TURNER.

15. Diplomatic History of the United States. A study of the actual negotiations between the United States and other countries, of the problems involved in these negotiations, of those national movements which were diplomatic in their character, though not involving negotiations, and of the progress of international law so far as it has affected or been affected by the United States. *Throughout the year; Tu., Th., at* 10. Assistant Professor FISH.

16. Social and Economic History of the American Colonies. Attention will be given to the European influences, to the motives and methods of colonization, and to the development of systems of industry and society through the adaptation of European institutions to the American environment. *Throughout the year; Tu., Th., at* 11. Dr. PHILLIPS.

20. Introductory Seminary in American History. During the first semester, topics in the political and constitutional history of the United States during the decade 1850-1860 will be taken up in the seminary method. In the second semester, the period of the Civil War and Reconstruction will be covered by lectures, and the class will prepare written topics. Each semester may be elected separately. *M. W., at* 2. Assistant Professor FISH.

29. Roman Imperial Institutions. A study of the organization and government of the Empire, especially in the second century, A. D. *First semester; Tu., Th., at* 10. (Omitted in 1905-06.) Professor MUNRO.

31. Medieval Civilization. Among the subjects are the work of the great intellectual leaders, the literature of the twelfth and thirteenth centuries, the heresies, and the university life. *First semester; Tu., Th., at* 10. Professor MUNRO.

32. Feudal Institutions. After a brief discussion of the origins of feudal usages, the main attention is directed to the period of their greatest development, and the influences at work to undermine them. *Second semester; Tu., Th., at* 10. Professor MUNRO.

33. Constitutional History of the Middle Ages. A comparative study of the governments in Germany and France, espec-

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ially during the twelfth and thirteenth centuries. (Omitted in 1905-06.) *Second semester; Tu., Th., at* 10. Professor MUNRO.

35. Period of the Renaissance. A survey of general political and social movements, and of the classical revival in Italy, 1300-1494. Open to students of suitable preparation. *First semester; Tu., Th., at* 11. Dr. SELLERY.

36. Age of Louis XIV. A survey of the development of modern Europe, especially during the period of 1661-1721. *Second semester; Tu., Th., at* 11. Dr. SELLERY.

37. The Old Régime. This course is descriptive rather than narrative, and aims to make clear the leading political, social, and intellectual characteristics of pre-Revolutionary Europe as a necessary preliminary to an appreciation of the importance and place of the French Revolution. Courses 37, 38, and 39 are based upon course 2 or its equivalent, and are intended to present continuously more fully the development of political institutions and of international relations in the later modern period. *First semester; Tu., Th., at* 12. (Alternates with course 45. Given in 1905-06.) Assistant Professor COFFIN.

38. The French Revolutionary and Napoleonic Periods, 1789 to 1814. Intended primarily to show the transitional character of this period, as accelerating and modifying the natural development from the Old Regime to the nineteenth century. Open to those who have had course 2 or its equivalent. *First semester; M., W. F., at* 10. Assistant Professor COFFIN.

39. Nineteenth Century Europe, 1814 to 1900. The course is concerned mainly with the development of political institutions and of international relations in accordance with the plan of courses 37 and 38. Open to those who have had course 2 or its equivalent. *Second semester; M. W., F., at* 10. Assistant Professor COFFIN.

41. Constitutional History of England. A study of the growth of English institutions. Open to juniors and seniors who have had course 5 or 6. *Throughout the year; Tu., Th., at* 12. *First semester*, Dr. TILTON; *second semester*, Assistant Professor COFFIN.

45. The Development of Prussian Leadership in Germany, 1640 to 1871. Intended to present the later modern development

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of Prussian institutions, and to trace the development of the relations of Prussia with the other German states. Open to those who have had course 2 or its equivalent. (Alternates with course 37. Omitted in 1905-06.) *First semester; Tu., Th., at* 12. Assistant Professor COFFIN.

50. Methods of History Teaching, with special reference to the work of secondary schools. Open to seniors of suitable preparation. *Throughout the year; W., at* 3. Professors TURNER and MUNRO.

For Graduates.

51. Historical Bibliography. An account of the present state of the materials for historical research, and an examination of the bibliographical tools most essential to the special study of history. *First semester; W., at* 10. Professor MUNRO.

52. Historical Criticism. An introductory survey of the principal problems of historical method. (Alternates with course 53.) *Second semester; W., at* 10. Professor MUNRO.

53. Palaeography and Diplomatics. (a) Elements of palaeography, with practical exercises in the reading of manuscript facsimilies; (b) elementary exercises in diplomatics. The first part of the course is identical with the first part of course 29 in Latin, and is arranged for the benefit of advanced students of language as well as for students of history. *Second semester; Fri.,* 9 *to* 11. (Omitted in 1905-06.) Professor MUNRO.

56. Seminary in Medieval History. Each year some portion of the history of the Crusades forms the subject matter. In 1905-06, the relations between the Franks and the Eastern peoples will be studied. A knowledge of three foreign languages is required. *Th.,* 4 *to* 6. Professor MUNRO.

57. Seminary in Modern History. English-Russian relations, 1763 to 1789. *First semester; S.,* 11 *to* 1. Assistant Professor COFFIN.

58. Seminary in American History. The history of Nullification, its origin and development. *Throughout the year; M.,* 2:30 *to* 4; *W.,* 4 *to* 6. Professor TURNER.

60. Historical Conference. One hour a week will be devoted to an informal conference between the instructional staff and

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graduate students, at which reports will be made on individual investigations, and current historical literature will be discussed. *F.*, 4 *to* 6, *alternate weeks.*

SPECIAL LECTURES.

Besides the regular courses of class instruction described above, series of lectures are given each year by scholars from without the University. In 1904-05, the lectures were given by Professor Ettore Pais, of the University of Naples on: The Use of Legendary Material in Early Roman History.

POLITICAL ECONOMY.

PROFESSOR ELY, PROFESSOR SCOTT, PROFESSOR MEYER, PROFESSOR COMMONS, ASSISTANT PROFESSOR ADAMS, ASSISTANT PROFESSOR BURCHELL, MR. DOWD, MR. LORENZ, AND DR. TAYLOR; SPECIAL LECTURERS: DR. JENKS, PROFESSOR GRAY, AND PROFESSOR ROBINSON.

General Statement.

The purpose of the department is to afford superior means for systematic and thorough study in economics and social science. The courses are graded and arranged so as to meet the wants of students in the various stages of their progress, beginning with elementary and proceeding to the most advanced work. They are also designed to meet the needs of different classes of students; as, for instance, those who intend to enter the public service, business, the professions of law, journalism, the ministry, or teaching, and those who wish to supplement their legal, theological, or other professional studies with courses in economics or social science. Capable students are encouraged to undertake original investigations, and assistance is given them in the prosecution of such work through seminaries and the personal guidance of instructors. A large fund has been placed at the disposal of the senior professor of the department to defray the expenses of an exhaustive investigation of the history of labor and allied movements in the United States, and special attention will be given to this field of research for several years. A means for the publication of the results of investigations of merit and importance is provided in the University bulletins.

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Among the special facilities which Madison affords to students in political economy mention should be made of the various libraries elsewhere described. The library of the University of Wisconsin is especially rich in economic works, while the Wisconsin Historical Library has valuable collections helpful in research and investigation. The materials for the study of history described in connection with the work in the department of History are especially helpful to students working in the field of political economy at a time when political economy is giving so much attention to historical investigation. The University library has complete sets of the most important economic and statistical journals, while the State Historical Library has important files of labor periodicals and valuable collections of documents relating to social movements.

The studies offered by the department are elective in all the courses of the University. The graduate work of the department may lead to the master's degree in not less than one year, and to the doctor's degree in not less than three years.

The work of this department has the following distinct but related aims:

1. To provide instruction in economics and sociology for undergraduates in all the courses of the University.
2. To provide advanced and graduate work in the studies falling within its field.
3. To assist and encourage the development of these studies.
4. With the co-operation of other departments, to provide special training courses for various practical pursuits.
5. To supplement the work of the College of Law.

Special attention is here called to the fact that graduates who are pursuing the law course may prepare to take their master's degree at the same time with the degree in law by completing the equivalent of two full studies during one year's work. Graduates of the College of Law are encouraged to devote an additional year to broadening out their training in economics, politics, and jurisprudence.

Especial attention is called to the large number of related courses in philosophy and ethics, and also to the considerable number of journalistic courses in the department of rhetoric and oratory.

POLITICAL ECONOMY AS AN UNDERGRADUATE MAJOR.—The requirements for an undergraduate major in addition to the thesis

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are twenty-one semester hours as a minimum, selected in part from the introductory courses, and in part from the advanced courses.

Candidates for the degree of Doctor of Philosophy in this department are required to present in their principal subject the equivalent of at least two full graduate courses during two years; in their first subordinate the equivalent of at least one such course during two years; and in their second subordinate the equivalent of at least one such course during one year.

Candidates for the master's degree must present in their principal subject the equivalent of at least two full graduate courses during one year; and in their subordinate subject the equivalent of at least one such course.

OUTLINE OF COURSES.

Primarily for Undergraduates.

1. The Elements of Economic Science. A general survey based upon the study and discussion of a text-book, supplemented by lectures, assigned reading, and exercises. Required of sophomores in the Course in Commerce and of all students beginning the subject of economics. *Repeated each semester; M., W., F., at* 8, 9, *and* 10. Professor MEYER, Assistant Professor ADAMS, and Mr. LORENZ.
2. The Elements of Sociology. A study of primitive man, followed by an investigation of the phenomena of civilized societies, leading up to a statement of the general principles of social evolution. *First semester; M., W., F., at* 10. Mr. DOWD.
3. Elements of Public Finance. An introductory study of the general principles of public expenditure, public revenue, public indebtedness, and financial administration. *First semester; M., W., F., at* 9. Mr. LORENZ.
4. Agricultural Economics. An elementary course designed for short-course students in the College of Agriculture. *December and January; M., W., at* 12. Dr. TAYLOR.
5. The Elements of Money and Banking. An introductory course, repeated each semester. In the first semester the course will be adapted to the needs of those who do not expect to continue the subject. In the second semester the needs of those who expect to specialize in money and bank-

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ing will be chiefly consulted. *First semester; M. W., F., at* 9; *second semester, at* 8. Professor SCOTT.

7a. Economic Geography. A general survey of the history and present status of industry and commerce in the principal countries of the world excepting the United States. *First semester; M., W., F., at* 8 *and* 9. Dr. TAYLOR.

7b. Economic Geography of the United States. After a brief survey of the development of industry and the expansion of commerce, a special study is made of the production and distribution of the principal articles which enter into American commerce. *Second semester; M., W., F., at* 8. Dr. TAYLOR.

8. Business Administration. The work outlined under the four heads which follow may be taken as a two hour course for three years or a three hour course for two years. It is designed to give such training in business operations as will fit young men for all-round usefulness, develop their business tendencies, and prepare them to pursue business with foresight and understanding. Considerable time is devoted to laboratory practice.

8a. Business Forms: commercial paper, bookkeeping, accounting and auditing. Parallel with the lectures and discussions is conducted the laboratory work, in which the students in cooperation with those in course 8d are promoted through various phases of clerical duties in merchandising, manufacturing, banking and transportation. *Throughout the year; M., at* 10, *and M., W., or Tu., Th.,* 2 *to* 4. Mr. GILMAN.

8b. Credit Instruments, funding operations, business organization and systems, factory accounting. Lectures and assigned reading and discussions. May be taken at the same time with 8a or 8c. *Throughout the year; Tu., at* 11. (In 1905-06 this course is also given *M., Tu., W., or Th.,* 2 *to* 4, and arranged to suit juniors in commerce.) Assistant Professor BURCHELL.

8c. Purchasing, marketing, advertising, credit business, and operations, including the practice of Wall Street and other financial centers, mining and transportation accounting. May be taken in connection with 8b or 8d. *Throughout the year; M., at* 11 in 1905-1906; thereafter, *Th., at* 11. Assistant Professor BURCHELL.

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8d. Practice Course. The application of principles taught in courses 8a, 8b, and 8c. In addition to lectures on organization, management, and duties of officers, students organize and manage fictitious business concerns, devise accounting and business systems, and audit the accounts, conducting the same in cooperation with students in 8a. Open to students who have finished courses 8a and 8b, and who have finished or are taking 8c. *Throughout the year; M., at* 11, and *M., W.*, or *Tu., Th.*, 3 *to* 5. Assistant Professor BURCHELL and Mr. GILMAN.

8e. Advanced Course. A more detailed and exhaustive study of special topics treated in the general course. Open to students who have taken 8b and are taking 8c. *Throughout the year; W., at* 11, *and another hour to be arranged.* Assistant Professor BURCHELL and Mr. GILMAN.

9. Commercial Law. The law of contracts, commercial paper, agency partnership, corporations, sales, bailments, and insurance; treated from the point of view of the business man rather than the lawyer. *Three times a week throughout the year.* Mr. HORACK.

18. Senior Seminaries for Thesis Students. Professor MEYER, Professor SCOTT, Assistant Professor ADAMS, and Dr. TAYLOR.

For Undergraduates and Graduates.

19. Distribution of Wealth. An historical and comparative study of the theories advanced by leading economists. *Second semester; W., F., at* 10. Professor COMMONS.

20. Industrial Evolution and Its Problems. A general survey of industrial development, followed by an examination of special problems, such as competition, monopolies, and trusts, concentration of wealth, municipal ownership, the inheritance of property, etc. *First semester; Tu., Th., at* 10. Professor ELY.

21. History of Economic Thought. The principal topics will be the following: The history of economic thought in classic antiquity; its subsequent development to the time of the mercantilists; the rise and growth of economics as a distinct branch of social science, with a brief discussion of existing schools of economic thought. *Second semester; Tu., Th., at* 10. Professor ELY.

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22. Modern Socialism. A study of the socialist movement during the nineteenth century, and an examination of the theories of those writers who are usually called socialists. *First semester; Tu., Th., at* 9. Mr. LORENZ.

23. Labor Problems. This course is devoted principally to the important labor problems of the day: strikes, trade-unions, employers' associations, arbitration, immigration, child labor, etc. *Second semester; M., W., F., at* 9. Assistant Professor ADAMS.

24. Problems in Taxation. Comprehends the more concrete problems of the day: mortgage, railroad, insurance, and double taxation, the personal property and inheritance taxes, etc. May be taken by those who have not had course 3. *Second semester; M., W., F., at* 10. (Omitted in 1905-06.) Assistant Professor ADAMS.

25. Labor Legislation. Comprehends a study of the labor law of the United States and foreign countries, the practical working of important statutes, and the sphere and function of the labor law in general. *First semester; M., W., F., at* 10. Assistant Professor ADAMS.

26. The Elements of Agricultural Economics. This course treats of the economic principles which underlie the prosperity of the farmer, and of all other classes so far as they are dependent upon agriculture. The subject is divided into two parts: In Part I the point of view is that of the farmer, and in Part II that of the nation as a whole. *First semester; Tu., Th., at* 12. Dr. TAYLOR.

27. Historical and Comparative Agriculture. This course consists of lectures and assigned readings on the agriculture of the Romans, on the development of agriculture in England and the United States, and on the present status of agriculture in the most important countries, with an attempt to find the explanation of historical changes and geographical differences. *Second semester; Tu., Th., at* 12. Dr. TAYLOR.

28. Agricultural Industries. An investigative course for seniors in the commercial and agricultural courses and for other advanced students. *First semester; Tu., Th., at* 8. Dr. TAYLOR.

29. Manufacturing Industries. A seminar devoted to the study of the history, administration and social relations of typical

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manufacturing industries. *Throughout the year; M.*, 7:30 *to* 9:30 P. M. Assistant Professor BURCHELL.

30. Social Statistics. Includes a study of vital statistics, suicide, crime, pauperism, etc. In this and the following course the laboratory method is followed. Students are required to do a thorough piece of statistical investigation under the immediate guidance of an instructor. This course is specially recommended to students taking thesis work in economics. Two lectures and two hours laboratory work a week, for which a credit of three hours is given. *First semester; Tu., Th., at* 12 *and M.*, 2 *to* 4. Assistant Professor ADAMS and Mr. LORENZ.

31. Economic Statistics. Prices, wages, family budgets, labor, and financial statistics will be studied. *Second semester; Tu., Th., at* 12; *M.*, 2 *to* 4. Assistant Professor ADAMS and Mr. LORENZ.

32. Government Statistics. A course on public statistical bureaus: their organization, methods, and publications. *Second semester; Tu., Th., at* 11. Assistant Professor ADAMS.

33. Financial History of the United States. The main lines of our financial development, including our monetary and banking history, will be traced by means of lectures, of which two will be given each week. Readings in the literature of the subject and topics for investigation will be assigned. A third hour each week will be devoted to quizzes on the lectures and assigned readings. A credit of one hour will be given students who attend the lectures only and pass an examination upon the matter thus presented. A credit of three hours will be given those who, in addition, do the readings and investigative work assigned. *First semester; M., W., F., at* 8. Professor SCOTT.

34. Corporation Finance and Securities. A study of the methods of financiering employed in great corporations, with special reference to the various sorts of negotiable securities which they issue, and the circumstances which affect their value. The course includes a study of the stock and produce exchanges, and of their relations to the business of banking. Open to students who have had Money and Banking. Lectures and assigned reading. *First semester; Tu., Th., at* 12. Professor MEYER.

35. Transportation and Communication. A general introductory

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course dealing with the most important principles and facts relating to railways, waterways and the express, telephone, telegraph, and postoffice services. *Repeated each semester; M., W., F., at* 9. Professor MEYER and Mr. LORENZ.

36. Special Problems in Transportation. An advanced course in which the more important special transportation problems are discussed in detail. Each student pursues an independent line of investigation. Lectures and reports. Open to students who have had course 35 or its equivalent. *Second semester; Tu., Th., at* 9. Professor MEYER.

37. Foreign Systems of Railways. A study of the railways of the leading countries of the world, historically and economically. Each student may select the railways of a particular country or read systematically in connection with the lectures on railways in different countries. Open to students who have had course 35 or its equivalent. *First semester; Tu., Th., at* 8. Professor MEYER.

38. Insurance. The general principles of the different forms of personal and property insurance and the main problems connected with each. Lectures and readings. Open to students who have had the Elements of Economic Science. *First semester; Tu., Th., at* 11. Professor MEYER.

39. Modern Sociological Thought. A survey of sociological writers beginning with Bodin and including the principal writers down to Gumplowicz, Schæffle, Giddings, and Small. *First semester; M., W., F., at* 8. Mr. DOWD.

40. Charities and Corrections. Embraces, first, a study of the dependent class, with special reference to the slum conditions in London, New York, Chicago, and Philadelphia; second, the defective class and the institutional treatment of this class; third, the delinquent class, causes and prevention of crime, prison management and discipline. Reformatories and other public institutions will be visited. *First semester; M., W., F., at* 11. Mr. DOWD.

41. Public and Private Charity. A comparative study of poor relief in the United States, England, and the principal continental countries. *Second semester; M., W., F., at* 11. (Omitted in 1905.) Mr. DOWD.

42. Charity Organizations. A study of poverty in American cities with special reference to the work of charity organi-

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zation societies. *Second semester; Tu., Th., at* 9. (Omitted in 1905.) Mr. DOWD.

43. Field Work. Students are encouraged to study charitable and correctional institutions in Madison and the vicinity, and opportunity is afforded for continuous work elsewhere during the summer months. It is believed that this method of continuous study, followed by field work, yields the best results. It is the aim of this department to furnish secretaries of charity organization societies, and other trained workers. Mr. DOWD.

Primarily for Graduates.

50. Economic History. A seminar for graduate students in selected fields of economic history. In 1905-06 the subject will be: The development of industry and commerce and the history of economic doctrine in the eighteenth century. *One lecture a week and one meeting a week for the discussion of papers by students; throughout the year (first semester only in 1905-06), at hours to be arranged.* Professor SCOTT.

51. Modern Economic Theory. Designed to give students some acquaintance with recent movements in economic theory, and practice in reading German texts. As a point of departure and contrast Schmoller's *Grundriss der allgemeinen Volkswirtschaftslehre* will be used as a text. *Second semester; Tu., Th., at* 9. (Omitted in 1905-06.) Assistant Professor ADAMS.

52. The Distribution of Wealth. Part I. The fundamental institutions in the existing social order and their relation to the present distribution of wealth. The principal topics discussed are: private property, contract and its conditions, vested interests, custom, competition, monopoly, authority, and the caritative principle. *First semester; Tu., W., Th.,* 2:30 *to* 4:00. (Omitted in 1905-06.) Professor ELY.

53. Distribution of Wealth. Part II. The shares of the various factors in distribution, viz.: rent, interests, profits, and wages. May be taken by those who have not had Part I, course 52. *First semester; Tu., Th.,* 2:30 *to* 4:00. Professor ELY.

54. Public Finance. This course deals first with the nature of public finance as a science and with its history, with the

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development and working of the public economy, and then proceeds to a discussion of public expenditures and a brief examination of public revenues. *Second semester; Tu., Th.*, 2:30 *to* 4:00. Professor ELY.

55. American Public Finance. Part I. The financial history of the United States. A critical and historical discussion of the finances of the federal government. *Second semester; Tu., Th.*, 2:30 *to* 4:00. (Omitted in 1905-06.) Professor ELY.

56. American Public Finance. Part II. An historical and critical account of the finances of the American commonwealths and local political units. *Second semester; Tu., Th.*, 2:30 *to* 4:00. (Omitted in 1905-06.) Professor ELY.

57. Principles of Taxation. A discussion of the history, principles, and problems of American taxation. Designed to supplement course 54; open only to students who have had an introductory course in Public Finance. *Second semester; Tu., Th., at* 10. Assistant Professor ADAMS.

58. Monopolies and Trusts. Based on Ely's *Monopolies and Trusts*, and consisting of lectures and discussions supplementary to it. (Summer Session, 1905.) Professor ELY.

59. Principles of Transportation. A lecture course designed primarily for graduate students who do not desire to specialize in transportation, but qualified seniors will also be admitted. An endeavor will be made to present the most important facts and principles of railway development as illustrated in the leading countries of the world. *Second semester; twice a week.* Professor MEYER.

60. The Psychological Sociologists. This course deals with that group of sociologists who approach sociology from a psychological point of view. *First semester; Tu., Th., at* 8. (Omitted in 1905-06). Mr. DOWD.

61. Seminary in Sociology. Topics in theoretical and practical sociology selected with reference to the needs and interests of the students will be investigated. *First semester; W.*, 2 *to* 4. Mr. DOWD.

62. Race Elements in American Industry. The industrial qualities of the several races, standards of living, the relative influence of climate, civilization and heredity; sources and causes of immigration; labor organizations; assimilation. Lectures. *First semester M., W., F., at* 8. Research work

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by special arrangement. (Omitted in 1905-06). Professor COMMONS.

63. Labor and Industrial History. Part I. A survey of colonial and later conditions to the time of the Civil War, including the beginnings of labor agitation and organization. Lectures. *Second semester; M., W., F., at* 8. Research work by special arrangement. Professor COMMONS.

64. Labor and Industrial History. Part II. The development of the modern labor movement beginning with the period of the Civil War and including political, legislative, and judicial changes. *First semester; M., W., F., at* 8. Research work by special arrangement. (Omitted in 1905-06). Professor COMMONS.

65. Research Course in Labor Problems. Designed especially for students electing theses on these subjects. *First semester; F.,* 4 *to* 6. Professor COMMONS.

70. Economic Seminary. Designed for graduate students who wish to carry on special investigations under the guidance which the department affords. A subordinate feature of the seminary work is the review of recent books and important articles published in the periodicals. *Throughout the year; Tu.,* 7:30 *to* 9:30 P. M. Professor ELY, Professor COMMONS, Professor MEYER, Assistant Professor ADAMS, Mr. DOWD, Mr. LORENZ, and Dr. TAYLOR.

SPECIAL LECTURES.

In addition to the regular courses of class instruction and lectures described above, special lectures are given each year by scholars and public men from without the University. The nonresident lecturers last year were Mr. Robert Hunter, of New York, on the subject of Poverty, Professor Frank W. Blackmar, of the University of Kansas, on the Theory of the Distribution of Wealth, and Dr. Victor Rosewater, of Omaha, on Municipal Taxation. The special lecturers for the current year include Dr. Albert Ernest Jenks, Chief of the Ethnological Survey, Philippine Islands, on the Ethnology of the Philippines, Professor John H. Gray, of Northwestern University, on Corporations and Labor Problems, Professor Edward D. Jones of the University of Michigan and Professor Maurice H. Robinson, of the University of Illinois, on Industrial Combinations and Railways.

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POLITICAL SCIENCE.

PROFESSOR PARKINSON, PROFESSOR REINSCH, ASSISTANT PROFESSOR SPARLING, AND MR. BARNETT.

Arrangement of Courses.

The undergraduate courses are open for election in the sophomore and junior years. As a rule, at least five semester hours of this work should be done before electing any of the advanced courses. The courses for undergraduates and graduates are open for election by juniors, seniors, and graduates. Sophomores of advanced standing may make arrangements to take some of these courses (12, 15, and 20). Some of the graduate courses (14, 19, 35, 36) are open to seniors presenting special qualifications in the way of preparatory work. The requirement for an undergraduate major in political science, in addition to the thesis, is twenty-one semester hours as a minimum.

Primarily for Undergraduates.

1. Elements of Political Science. A general survey of the field of political science. *First semester; M., W., F., at* 8. Assistant Professor SPARLING.
2. Elementary Law. The nature and sources of law, and the methods of its application. *First semester; Tu., Th., at* 8, *M., at* 3. Mr. BARNETT.
3. Elements of Administration. The theory of administration, and a survey of the administrative systems of the chief states of modern Europe and of the United States. *First semester; Tu., Th., at* 8. Assistant Professor SPARLING.
4. The Constitution of the United States. An outline course of lectures designed, primarily, for those who cannot give more time to this subject, but which may be taken with profit in connection with any of the longer courses in Constitutional Law. *Second semester; F., at* 10. Professor PARKINSON.
6. Administrative Problems. A survey of the primary administrative activities of the chief states of Europe and the United States. *Second semester; Tu., Th., at* 8. Assistant Professor SPARLING.
7. Government and Politics in the United States. A general study of the American system of government in its local,

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state, and federal organs and their relations to each other, as well as of the methods of political action. *Second semester; M., W., F., at* 8. Professor REINSCH.

For Undergraduates and Graduates.

9. Roman Law. In 1905-06: The Institutes of Roman Law. In 1906-07: The History of Roman Law. *First semester; M., W., at* 12. Mr. BARNETT.
10. History of English and American Law. A study of the development of legal institutions in connection with political and social history. *Second semester; M., W., at* 11. Professor REINSCH.
11. Jurisprudence. Analysis of the main concepts of the science of law, on the basis of the juristic classics. Open to students who have had an elementary course in law. *Second semester; Tu., Th., at* 12. Mr. BARNETT.
12. English and American Constitutional Law. Lectures upon the development of the English constitution from the time of Magna Charta, with emphasis upon its unwritten growth since the Revolution of 1688. These lectures are followed by a study of the constitution of the United States in the light of the highest judicial interpretation. *Throughout the year; M., W., F., at* 9. Professor PARKINSON.
13. American Constitutional Law. Designed to follow, or at least to supplement course 12. A closer study is here made of the more important parts of the constitution, with emphasis upon the amendments. An examination of leading cases is made prominent. Open to graduates and to other advanced students who have had course 12 or its equivalent. *Throughout the year; Tu., Th., at* 9. Professor PARKINSON.
15. Municipal Government in Europe and the United States. *Second semester; M., W., F., at* 8. Assistant Professor SPARLING.
16. State Administration. A study of the local and state administrative systems of the United States. *First semester; M., W., F., at* 9. Assistant Professor SPARLING.
17. Federal Administration. A study of the organization and functions of the different branches of our federal service. *Second semester; M., W., F., at* 9. Assistant Professor SPARLING.

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18. International Law. An inquiry into the nature, sources, and sanctions of international law, and an outline study of its growth, with emphasis upon its modern development through the expansion of commerce and the influence of Christian civilization. *First semester; M., W., F., at* 10. Professor PARKINSON.

20. Contemporary International Politics. In 1906, the Oriental situation will be studied, and special attention will be given to the resulting movements in European and American diplomacy. *Second semester; M., W., F., at* 10. In connection with this course a series of public lectures on problems of international politics will be given. Professor REINSCH.

21. Colonial Politics. A study of the principal systems of colonial government, and of the methods of colonial administration, especially as affecting finance, commerce, agricultural and industrial development, labor, and education in the dependencies. *First semester; M., W., F., at* 10. Professor REINSCH.

22. Party Government. Special attention will be given to party organization and the methods of legislative bodies. *First semester; Tu., Th., at* 11. (Omitted in 1905-06). Assistant Professor SPARLING.

23. American Administrative Law. This course has in view the needs of the legal profession. *Second semester; Tu., Th., at* 11. (Omitted in 1905-06.) Assistant Professor SPARLING.

25. The Law of the Press. The law of copyright, literary property, libel, privileged publications, and other topics relating to the publication of books and newspapers. Designed especially for students preparing for journalism and the law. *Second semester; M., at* 3. Mr. BARNETT.

26. Legislation. A study of the theory and practice of legislative action. Given in years when the state legislature is in session. *Throughout the year; Tu.,* 4 *to* 6. Professor REINSCH.

Primarily for Graduates.

14. Seminary in Constitutional Law. A comparative study of the constitutions of some of the leading states of the world in their more important features, giving special emphasis to the present trend in constitution making. Open to

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graduates, and to seniors who have had courses 12 and 13 or their equivalent. *Second semester; M., W., at* 10. (Omitted in 1906.) Professor PARKINSON.

19. Seminary in International Law. With emphasis upon diplomacy, treaties, the rights and obligations of neutrals, and the method of settling international disputes without resort to war. Open to graduates, and to others who have had course 18. *Second semester; M., W., at* 10. Professor PARKINSON.

35. History of Political Thought. The development of political philosophy from the Greeks to the present time, and its connection with political history. May be taken by seniors. *First semester; M., W., F., at* 11. (Omitted in 1905.) Professor REINSCH.

36. Philosophy of the State. A critical study of contemporary political thought and terminology. *First semester; M., W., F., at* 11. This course may be elected by seniors of suitable preparation. Professor REINSCH.

37. Juristic Classics. In 1906: The Institutes of Gaius, first two books; reading and commentary. *Second semester; F., at* 11. Mr. BARNETT.

39. Seminary in Administration. Some important phases of state administration will be studied. *Throughout the year; Tu.*, 7:30 *to* 9. Assistant Professor SPARLING.

40. Seminary in Politics. For 1905-06: Diplomacy and treaty relations in the Orient. *Throughout the year; W.*, 7:30 *to* 9:30. Professor REINSCH.

For groups of studies in the departments of History, Political Economy, and Political Science, arranged as special training courses in practical sociology, statistics, public science, and journalism, see the special announcement of the above departments, which may be had upon application to the Registrar.

GREEK.

PROFESSOR SMITH*, PROFESSOR KERR, ASSISTANT PROFESSOR LAIRD, DR. ANDERSON, AND MR. HASTINGS.

A course in Elementary Greek is offered for the benefit of students who have not taken the preparatory work in the high school.

*On leave of absence for the academic year 1904-05.

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It is open to all freshmen, whatever group of studies they may have offered for admission, and may also be taken in any other year, counting ten hours towards the fulfillment of the language requirement of sixteen or twenty-four hours, or as an elective in connection with any line of work. On completion of course A, a good student may, on the recommendation of the instructor, be admitted to course 1, thus gaining the opportunity of advancing more rapidly than if the second year were spent on course B. An exceptionally strong student, who has taken course A in his freshman year, and desires then to make Greek his major, may in his sophomore year take courses 1 and 2, and thereby be enabled to carry on advanced work in his junior and senior years.

The object of the graduate courses in Greek is to secure, on the part of advanced students, wide reading in Greek authors, acquaintance with the latest results of philological investigation through constant reading of critical journals, the forming of habits and learning of methods of research. In pursuance of the last named purpose especially, the Greek Seminary meets to hear and to discuss carefully prepared papers, the members leading in turn.

Primarily for Undergraduates.

A. Elementary Greek. White's *Beginner's Greek Book*, Xenophon's *Anabasis*. *Throughout the year; M., Tu., W., Th., F., at* 12. Dr. ANDERSON.

B. Xenophon's *Anabasis* III-IV, Homer's *Odyssey* I-IV, Greek Composition. *Throughout the year; M., W., F., at* 10. Mr. HASTINGS.

For students who have had one year of preparatory work.

1. Herodotus VIII, Homer's *Odyssey* V-XII, Lysias, Grammar and Composition. *Throughout the year; M., T., W., F., at* 8. Assistant Professor LAIRD.

For students who have had two years of preparatory work.

2a. The *Philippics* of Demosthenes, the *Bacchae* of Euripides, Goodwin's *Moods and Tenses*. *First semester; M., W., F., at* 10. Professor KERR.

Plato's *Apology* and *Crito*, Thucydides VII, Jebb's *Primer of Greek Literature*. *Second semester; M., W., F., at* 10. Dr. ANDERSON.

2b. Herodotus VII, or selected dialogues of Lucian, and Euripides, (two plays). *Throughout the year; Tu., Th., at* 11. Professor KERR and Dr. ANDERSON.

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For those who have had course 1, or whose preparatory work has been particularly good.

3. Greek Prose Composition. *Once a week throughout the year;* Professor SMITH, or Assistant Professor LAIRD.

This course will be required of those who expect to get recommendations to teach.

4. Easy Greek for Sight Reading. Open to those who have completed course 1. *One hour a week.* Professor SMITH.

For Undergraduates and Graduates.

5a. Greek Lyric Poets. Study of meters. *First semester; M., W., F., at* 9. Professor SMITH.

5b. Thucydides; Demosthenes. *Second semester; M., W., F., at* 9. Professor SMITH.

6. Greek Dramatic Poets. *First semester*, Aeschylus (two plays), Sophocles (two plays). Study of meters. *Second semester*, Aristophanes (two plays), Aristotle's Poetics, discussion of the Greek drama. *M., W., F., at* 9. (Omitted in 1905-06.) Dr. ANDERSON.

7. Greek Orators. *Throughout the year; Tu., Th., at* 9. Assistant Professor LAIRD.

8. Plato. The Republic. Books I, II, III, and IV, with selections from other parts of the dialogue. This course is intended as an introduction to the study of Greek philosophy. *Throughout the year; Tu., Th., at* 9. (Omitted in 1905-06.) Professor KERR.

10. Advanced Greek Composition. *First semester; once a week.* Professor SMITH or Assistant Professor LAIRD.

11. Modern Greek. A study of the changes in form and structure which the language has undergone since the classical period. *Throughout the year; Tu., Th., at* 9. Professor KERR.

15. Classical Archaeology. (See Latin 28.)

16. Greek Religion. (See Latin 27.)

Primarily for Graduates.

20. Thucydides. The whole of the author is read privately by the members of the class. *Throughout the year; S.,* 9 *to* 11. Professor SMITH.

21. Greek Drama. Sophocles. The whole author is read pri-

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vately by the members of the class. As supplementary to this course the scenic antiquities will be studied, Haigh's *Attic Theater* being used as a basis. *Throughout the year; S.*, 9 *to* 11. (Omitted in 1905-06.) Professor SMITH.

22. Lyric Poetry. Especial attention is given to Pindar, the whole being read privately. *Throughout the year; S.*, 9 *to* 11. (Omitted in 1905-06.) Professor SMITH.

23. Greek Dialects. A study of dialect sounds and forms based on the inscriptions. Solmsen's *Inscriptiones Graecae* will in the main be followed. *Two hours a week for a portion of the year, as part of the regular seminary work.* (Omitted in 1905-06.) Assistant Professor LAIRD.

24. Greek Literature. Lectures, with selections from Greek authors, read by the class: Lyric Poetry. *First semester; twice a week.* Drama and History. *Second semester; twice a week.* (Omitted in 1905-06.) Professor SMITH.

25. Greek Orators. Antiphon, Andocides, Lysias, and Isaeus. The whole of these authors will be read by the class. *Throughout the year; W.*, 4:30 *to* 6. Assistant Professor LAIRD.

26. Herodotus. The whole of the author is read privately by the members of the class. *Throughout the year; W.*, 4 *to* 6. (Omitted in 1905-06.) Assistant Professor LAIRD.

30. Greek Grammar. History of the sounds and forms. *Throughout the year; Tu., Th., at* 5. (Omitted in 1905-06.) Assistant Professor LAIRD.

31. Greek Syntax. Lectures on the development of Attic usage, with particular reference to the cases and moods. *Th., at* 8. Assistant Professor LAIRD.

33. Journal Club. Reports on and discussion of current philological literature. *One hour a week throughout the year.* Professor SMITH and Assistant Professor LAIRD.

SANSKRIT.

34. Elementary Sanskrit. *Throughout the year; M., W., at* 10. Assistant Professor LAIRD.

35. Advanced Sanskrit. Selections from the Rig-Veda. *Throughout the year; W., at* 11. Assistant Professor LAIRD.

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LATIN.

PROFESSOR SLAUGHTER, ASSISTANT PROFESSOR FISKE, ASSISTANT PROFESSOR LAIRD, ASSISTANT PROFESSOR SHOWERMAN*, DR. ALLEN, MR. SMILEY, AND MR. FILBEY.

Arrangement of Courses.

The courses in Latin are divided into three groups, as follows:

I. Courses A to 5 are intended for undergraduates in the early years of the college course. They form an introduction to the more advanced courses, and furnish, for those who do not continue the subject beyond the second year in college, an acquaintance with the best specimens of Latin prose and verse. They may not be counted for the master's degree. Course A is intended for students whose preparation has for any reason been less than the amount nominally required for entrance to the University. It counts towards the bachelor's degree, and is accepted in fulfillment of the language required in the University. It will not be accepted as part of a Latin major. Course 1 must precede all other courses except A. Course 2 is recommended to students who intend to make Latin a major, and should be taken in the first year along with course 1.

II. Courses 8 to 20 are open to students who have satisfactorily completed courses 1 and 3, or an equivalent, in group I, and may be counted towards the master's degree.

III. Courses 25 to 33 are primarily for graduate students, and are ordinarily not open to undergraduates, or those who have completed less than twenty-six semester hours of undergraduate Latin.

Latin Major.

The requirements for an undergraduate major in Latin are, in addition to the thesis, twenty-two semester hours as a minimum. At least ten semester hours must be chosen from group II, but no specific requirement of courses is made.

Primarily for Undergraduates.

A. Cicero and Vergil. Four orations of Cicero and six books of Vergil's *Aeneid* will be read in class. Some attention will

*On leave of absence for the academic year 1904-05.

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be given to writing Latin. *Throughout the year; M., Tu., W., Th., F., at* 8. Mr. FILBEY.

1. Livy, Cicero, and Terence. Livy, Books I and XXI; Cicero, *De Senectute*, and Terence, *Phormio* and *Andria*, will be read. The class will meet in three sections. *Throughout the year; M., W., F., at* 8, 10, *and* 11. Assistant Professor FISKE will meet the section at 11; Dr. ALLEN at 10; and Mr. SMILEY at 8.
2. Prose Composition and the reading of easy prose authors. The translation from Latin requires no preparation, and is intended to supplement the work in writing Latin. *Throughout the year; Tu., Th., at* 8, 10, *and* 11. Assistant Professor FISKE, Mr. SMILEY, and Dr. ALLEN.
3. Horace and Cicero. Selections from the odes, satires, and epistles of Horace, and the letters of Cicero. Latin literature, lectures and readings, especially from prose writers. *Throughout the year; M., W., F., at* 9. Professor SLAUGHTER and Assistant Professor FISKE.
4. Advanced Prose Composition. This course must be preceded by course 2. *Throughout the year; Th., at* 3. *Two hours credit.* Assistant Professor FISKE and Mr. SMILEY.
5. Catullus, Pliny, and Martial. This course is intended to supplement course 3, and should be taken with or after it. *Throughout the year; Tu., Th., at* 9. Dr. ALLEN.

For Undergraduates and Graduates.

8. Cicero's Letters and Orations. A reading course, with lectures, reports, and assigned topics. Special attention will be paid to the life and personality of Cicero. *Throughout the year; Tu., Th., at* 11. Mr. SMILEY.
9. Plautus, Terence, and Seneca. This course is intended to give, by reading and supplementary lectures and topics, a general survey of the Roman drama. *Throughout the year; W., F., at* 8. (Omitted in 1904-05.) Assistant Professor SHOWERMAN.
10. Lucretius. The first, third, and fifth books of the *De Rerum Natura*, and selections from the remaining books are read in class. Lectures and assigned reading on topics connected with the course. *First semester; M., W., F., at* 10. Professor SLAUGHTER.
11. Vergil. The last six books of the *Aeneid* are read in class,

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with selections from Vergil's other works. Lectures and assigned reading on topics connected with the course. *Second semester; M., W., F., at* 10. Professor SLAUGHTER.

12. Life of the Greeks and Romans. A lecture course illustrated by lantern slides. Open to all students. A knowledge of Greek and Latin is not essential. *Throughout the year; Tu., Th., at* 9. (Omitted in 1904-05.) Assistant Professor SHOWERMAN.

13. Literary Criticism. During the first semester, early Latin writers of epic and drama are studied in connection with the criticisms passed upon them by later writers. Selections from the literary criticisms of Cicero, Horace, and Quintilian are read during the second semester. Topics are required. *Throughout the year; W., F., at* 9. Dr. ALLEN.

14. Cicero and Seneca. Selections from the philosophical works of Cicero and Seneca are read in class. This course is intended to give, by reading and supplementary lectures and topics, an account of the contribution of the Romans to the history of philosophy. *Throughout the year; W., F., at* 9. (Omitted in 1905-06.) Dr. ALLEN.

15. Latin Composition. This course is intended for seniors and graduate students. It must be preceded by course 4, or its equivalent. *Throughout the year; Tu., at* 3. (Omitted in 1905-06.) Professor SLAUGHTER.

16. Teachers' Course. A course on the methods and materials used in teaching Latin, with special reference to the work in secondary schools. Lectures, reports, discussions, and practice teaching. Open to juniors and seniors who have had not less than twenty unit-hours of Latin. *Throughout the year; Tu., at* 3. Professor SLAUGHTER.

17. Latin Literature. A general survey of Latin literature from the earliest period to the reign of Trajan, by means of lectures and required reading in the Latin authors, and in English translations. *Throughout the year; Tu., Th., at* 10. (Omitted in 1904-05.) Assistant Professor FISKE.

18. Roman Satire. A reading course of selections from the works of Ennius, Lucilius, Varro, Horace, Seneca, Persius, Petronius, and Juvenal. Lectures are given on the origin and development of Roman Satire. Topics are required. *Throughout the year; Tu., Th., at* 10. Assistant Professor FISKE.

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19. Roman Historians to Tacitus. A reading course of selections from the Annalists, Cicero, Cæsar, Nepos, Sallust, Livy, and Tacitus. Lectures are given and topics are required. *Throughout the year; M., W., F., at* 10. (Omitted in 1904-05.) Professor SLAUGHTER.
20. Literature of the Late Empire. A reading course in pagan and Christian authors, with lectures on the religion, literature, and art of the period. *First semester; M., W., F., at* 8. (Omitted in 1904-05.) Assistant Professor SHOWERMAN.

For Graduates.

25. Latin Grammar. Lectures on the sounds and forms of the Latin language. Open to graduates and properly qualified seniors. *Second semester; Tu., Th., at* 8. (Omitted in 1904-05.) Assistant Professor LAIRD.
26. Latin Syntax. Lectures on Latin syntax, illustrative of the historical method. *First semester; Tu., Th., at* 8. (Omitted in 1904-05.) Assistant Professor LAIRD.
27. Religion of the Greeks and Romans. Lectures, studies, and reports on mythology, rituals, and religious institutions of the Greeks and Romans. *Throughout the year; M., W., at* 9. (Omitted in 1905-06.) Assistant Professor FISKE.
28. Classical Archaeology. Lectures on the remains of ancient Greece and Rome, with special reference to the history of classical art, illustrated by lantern slides. *Throughout the year; Tu., Th., at* 9. Assistant Professor SHOWERMAN.
29. Epigraphy and Palaeography. Lectures. Reading of inscriptions and facsimilies of Latin manuscripts. *Throughout the year; Tu.,* 3 *to* 5. Professor SLAUGHTER.
30. Latin Literature. Lectures and assigned readings, with a minute examination of the authors read. The period of the Republic is studied one year. The period of the Empire is studied another year. *Throughout the year; Tu., Th., at* 11. (Omitted in 1905-06.) Dr. ALLEN.
33. Latin Seminary. The work of the Seminary varies from year to year according to the author or subject under discussion. In 1904-05, a critical and exegetical study of the Odes of Horace was made. The whole of the author was read privately by the members of the Seminary, and reports, topics, and lectures formed a part of the year's work. In 1905-06, the Annals of Tacitus will form the basis of the

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work. Lectures on Roman historiography will be given, and a particular study will be made of the early Empire. In 1906-07, Plautus will be the author studied, and the work will center about the *Miles Gloriosus*. The members of the Seminary will be expected to read all of Plautus and Terence. *Throughout the year; W., 4 to 6.* Professor SLAUGHTER.

HEBREW AND HELLENISTIC GREEK.

PROFESSOR WILLIAMS, DR. KELLY, MR. KNIGHT, AND DR. BRESLICH.

The various language and literary courses given below are open as electives to students in any department of the University who are prepared to carry them on with profit. The purposes for which they are pursued are (a) as a means to liberal culture; (b) as furnishing necessary data to a study of phonetics, philosophy of language, and comparative philology; (c) as an important department of history, archaeology, and art; and (d) as preparatory to studies in ethics and theology.

As may be seen from the following, the department also offers courses in Arabic, Assyrian, Syriac, and Aramaic.

Primarily for Undergraduates.

1. The General Principles of the Hebrew Language. Reading of selections from Genesis. *Four times a week throughout the the year.* Professor WILLIAMS and Dr. BRESLICH.
2. This course is the same as course 1, but begins in the second semester of each year as a two-hour study, and continues as a two-hour study during the first semester of the following year. Dr. BRESLICH.
3. Historical Hebrew. The books of Samuel, with a review of the verb. *Twice a week; first semester.* Dr. KELLY.
4. The Book of Deuteronomy. A general review of etymology. *Twice a week; second semester.* Dr. KELLY.
7. Exercises in Writing Hebrew. *Once a week throughout the year.* Professor WILLIAMS.
16. Selected chapters from the Gospels, and the general principles of Hellenistic Greek. For students who have not stu-

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died classical Greek. *Four times a week throughout the year.* Mr. KNIGHT.

17. This course is the same as course 16, but begins as a two-hour study in the second semester of each year, and continues as a two-hour study during the first semester of the following year. Professor WILLIAMS and Mr. KNIGHT.

18. Matthew and Mark, and a study of the etymology of Hellenistic Greek. *Twice a week throughout the year.* Mr. KNIGHT.

19. Luke and Acts. Historical study with careful attention to Hellenistic Greek syntax. *Twice a week throughout the year.* Mr. KNIGHT.

23. History of the Hebrew People from the Settlement in Canaan to the Division of the Kingdom. A sketch of the literature of the period. *Once a week throughout the year.* Professor WILLIAMS.

24. History of the Hebrew People from the Division of the Kingdom to the Fall of Jerusalem. The literature of the Assyrian period. *Once a week throughout the year.* Dr. KELLY.

25. History of the Jewish People during the Maccabean and Roman periods. *Once a week; second semester.* Professor WILLIAMS.

26. Historical Geography of Palestine; Hebrew Archaeology; Recent Discoveries. *Once a week throughout the year.* Professor WILLIAMS.

For Undergraduates and Graduates.

5. The Minor Prophets. Critical translation of the Hebrew text with close attention to vocabularies and syntax. *Twice a week throughout the year.* Dr. KELLY.

6. The Book of Job. A study of the form and characteristics of Hebrew poetry. *Twice a week throughout the year.* Professor WILLIAMS.

8. Hebrew Syntax, with selected passages for reading. *Twice a week throughout the year.* Dr. KELLY.

27. The Psalms: Books I and II, and a study of the form and characteristics of Hebrew poetry. *Twice a week throughout the year.* Professor WILLIAMS.

Of courses 5, 6, and 27 only two may be taken in any one year.

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Primarily for Graduates.

9. Advanced Hebrew Syntax. *Twice a week; first semester.* Dr. KELLY.
10. Advanced Hebrew Etymology. *Twice a week; second semester.* Dr. KELLY.

Courses 9 and 10 will be given in alternate years.

11. Hebrew Seminary. In successive years Isaiah I.-XXXIX., XL.-LXVI., and the third and fourth books of the Psalms will form the center of the work. *Once a week (two hours) throughout the year.* Professor WILLIAMS and Dr. KELLY.
12. Arabic. *First semester:* Easy reading and principles of the language. *Second semester:* Reading of selections and some of the shorter suras of the Quran. *Twice a week.* Dr. KELLY.
13. Advanced Arabic: The Quran. *Once a week throughout the year.* Dr. KELLY.
14. Elementary Assyrian. A study of selected texts and of (a) the grammatical principles of the language, and (b) the use of the material for lexicographical purposes. *Twice a week throughout the year.* Dr. KELLY.
15. Biblical Aramaic, ten weeks; Syriac, the remainder of the year. *Twice a week.* Alternates with 14. Dr. KELLY.
20. John. Critical study and textual criticism. *Twice a week throughout the year.* Professor WILLIAMS.
21. Hellenistic Greek Seminary. In successive years the Epistle of Paul to the Romans, the second gospel, and the fourth gospel will form the center of the work. *Once a week (two hours) throughout the year.* Mr. KNIGHT.
22. Advanced Hellenistic Greek Grammar. *Twice a week throughout the year.* Professor WILLIAMS.

ROMANCE LANGUAGES.

FRENCH.

PROFESSOR OWEN, ASSOCIATE PROFESSOR GIESE, ASSISTANT PROFESSOR GAY, MR. PATZER, MR. SEYMOUR, MR. SCHLATTER, MR. MACNISH, AND MR. BOARDMAN.

As many students desire a reading knowledge of French only, the effort of the elementary courses is concentrated upon reading. Students are expected at the end of an ele-

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mentary course to read with sufficient ease and accuracy to make a practical use of French text-books in the prosecution of their studies.

For Undergraduates.

1. General Elementary Course. Otto's *French Conversation Grammar; Roman d'un Jeune Homme Pauvre* and *La Petite Fadette* (the former read mainly, and the latter altogether independently of the class-room); *Le Cid, Le Misanthrope, Athalie. Four hours a week throughout the year.* Nine sections. Associate Professor GIESE, Assistant Professor GAY, Mr. SCHLATTER, Mr. MACNISH, Mr. PATZER, and Mr. BOARDMAN.

1a. Special Elementary Course. Conducted largely in French. About 1200 pages of modern prose will be read. Open only to students who present evidence of good training in language study. *M., Tu., W., Th., at* 9. Associate Professor GIESE.

2. Special Elementary Course for Classical Students. Like course 1, but with supplementary work. *Tu., W., Th., F., at* 8. Assistant Professor GAY.

3. Special Elementary Course for Engineers. A modification of course 1 to meet the requirements of the College of Engineering. *Tu., W., Th., F., at* 8, Mr. BOARDMAN. *M., Tu., W., Th., at* 9, Mr. MACNISH. *Tu., W., Th., Fr., at* 2, Mr. SCHLATTER.

4. Special Elementary Course for Students in Commerce. Chardenal's *Complete French Course;* Super's *French Reader; Gil Blas, Colomba, Le Roi des Montagnes. Tu., W., Th., F., at* 9. Mr. PATZER.

Primarily for Undergraduates.

5. Advanced Reading and Syntax. Reading in class of parts of *Cinq-Mars, Ursule Mirouet;* reading independently for examination of the *Histoire de Charles XII.*, or other easy French to be assigned. *M., W., F., at* 11. Professor OWEN.

6. Advanced Reading. Continuation of course 5. Reading of *Travailleurs de la Mer*, etc. *M., W., at* 12, unless changed by special arrangement. Professor OWEN.

7. Scientific French Reading for Engineers. Continuation of course 3. Herdler's *Scientific Reader*, Luquiens' *Popular*

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Science, and other scientific prose. *First semester; M., W., F., at* 12. Mr. MACNISH.

10. Composition. Open to students who have finished courses 1, 2, 3, or 4, or an equivalent. *Tu., Th., at* 9. Assistant Professor GAY.

11. Composition. Continuation of course 10. *W., F., at* 9. Assistant Professor GAY.

15. Conversation and Reading. This course is open only to students who have finished courses 1, 2, 3, or 4, or an equivalent. Section 1: *Tu., Th., at* 12. Section 2: *W., F., at* 8. Associate Professor GIESE.

16. Conversation and Reading. Continuation of course 15. *Tu., Th., at* 8. Associate Professor GIESE.

17. Conversation, Composition, and Reading. A practical course for sophomore students in Commerce. *Tu., Th., at* 11. Mr. PATZER.

18. Commercial Correspondence. For junior students in Commerce. *Twice a week throughout the year.* Mr. PATZER.

19. Commercial Correspondence (continued). *Twice a week throughout the year.* For senior students in Commerce. Mr. PATZER.

20. History of French Literature from the Renaissance to the present time. Lectures, with collateral reading. This course is conducted in English. It is open to students who read French with facility. *M., W., F., at* 12. (Omitted in 1905-06). Associate Professor GIESE.

20a. General Survey of French Literature. An outline study of literary history from the beginnings, supplemented by considerable drill in reading and translation. This course is conducted partly in French. It is open to students who have completed course 1, or 2. *M., W., at* 8. Associate Professor GIESE.

25. Lectures on Thought and Language. *First semester; M., at* 11. At present embodied in course 5. Professor OWEN.

For Undergraduates and Graduates.

21. French Literature. From the Renaissance to the Revolution (excluding the classical drama). Lectures and collateral reading. This course is conducted in English. It is open to students who read French with facility. *First semester; M., W., at* 12. Associate Professor GIESE.

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22. French Literature. The Classical Drama: Moliere, Corneille, and Racine. Lectures and collateral reading. This course is conducted in English. It is open to students who read French with facility. *Second semester; M., W., at* 12. Associate Professor GIESE.

23. French Literature. The Nineteenth century, with special attention to Victor Hugo and the Romantic Movement. Lectures, reports, and collateral reading. This course is conducted chiefly in French. *Throughout the year; Tu., Th., at* 8. (Omitted in 1905-06.) Associate Professor GIESE.

34. The Carlovingian Cycle, with readings from *La Chanson de Roland* and *Le Voyage de Charlemagne. Throughout the year; M.*, 10 *to* 12. Assistant Professor GAY.

35. The Arthurian Cycle, with a special study of Chrestien de Troyes. *Twice a week throughout the year.* Assistant Professor GAY.

36. The Picard and Norman Dialects, with special reference to the history of the French element in English. *Aucassin et Nicolete* and *Les Lais de Marie de France. Throughout the year; W.*, 9 *to* 11. Assistant Professor GAY.

37. Seminary in the Old French Theater. *First semester, two hours a week.* Assistant Professor GAY.

38. Provencal. *Second semester; two hours a week.* Assistant Professor GAY.

60. The Principles of Language. Examination of linguistic thought, its special nature, and the less obvious verbal means of indicating both the elements of thought and their mode of combination. *First semester; Tu.*, 7:15 P. M. Professor OWEN.

Courses 34 to 36 may be taken successively, or two may be taken conjointly, with assigned readings sufficient to make a major for a second degree.

ITALIAN.

ASSISTANT PROFESSOR GAY AND PROFESSOR OWEN.

Primarily for Undergraduates.

1. Elementary. Translation into English of the Italian exercises in Sauer's *Conversation Grammar*, and of Manzoni's

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I Promessi Sposi. This course is in general like that in Spanish, with which it alternates. *Three hours a week throughout the year.* Professor OWEN.

2. Advanced. Dante and other classics. *Twice a week throughout the year.* Assistant Professor GAY.

SPANISH.

ASSOCIATE PROFESSOR GIESE, PROFESSOR OWEN, AND MR. SEYMOUR.

Primarily for Undergraduates.

1. Elementary. Translations into English of the Spanish exercises in Sauer's *Conversation Grammar;* Knapp's *Spanish Readings* and Marsh's *Dona Perfecta.* Alternates with Italian. *Three hours a week throughout the year.* (Omitted in 1904-05.) Professor OWEN.
2. Advanced. Reading of selections from Cervantes *(Don Quijote),* from Calderon *(El Magico Prodigioso),* and from modern classics. *Twice a week throughout the year.* Associate Professor GIESE.
3. Elementary. For students in Commerce. Giese's *First Spanish Book and Reader.* Section 1: *M., Tu., W., Th., at* 9; section 2: *M., Tu., W., Th., at* 12. Mr. SEYMOUR. Section 3, *M., Tu., W., Th., at* 12. Mr. SCHLATTER.
4. Conversation, Composition, and Reading. A practical course for sophomore students in Commerce. *Tu., Th., at* 11. Mr. SEYMOUR.
5. Conversation, Composition, Reading, and Commercial Correspondence. For junior students in Commerce. *W., F., at* 11. Mr. SEYMOUR.
6. Conversation, Composition, Reading, and Commercial Correspondence (continued). For senior students in Spanish. *Twice a week throughout the year.* Mr. SEYMOUR.

SCANDINAVIAN LANGUAGES.

PROFESSOR OLSON.

This department offers instruction in all of the Scandinavian languages (Norwegian, Danish, Swedish, and Old Norse). From one year's instruction in Modern Norse the student is expected to

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be able to read both Norwegian and Danish authors. The principal courses are devoted mainly to Norwegian authors, but additional instruction in Danish and Swedish literature is offered to students desiring to pursue these branches beyond the limits of the prescribed courses.

Courses 2a and 2b, taken together, or courses 3 and 4, may be taken as part of the required language work. (See Required Studies, p. 94.)

Primarily for Undergraduates.

1. Modern Norse. Olson's *Norwegian Grammar and Reader*, together with easy selections in prose and poetry. For beginners. *Three hours a week throughout the year.*

2a. Modern Norse. Björnson's *Synnöve Solbakken*, *En glad Gut*, and his shorter peasant stories: Gunderson's collection of *Norske Digte*. *Three hours a week throughout the year.*

2b. Written and Oral Translation into Norse. The reading of prose selections as a basis for work in composition and conversation. *Once a week throughout the year.*

3. Selections from the *Reader;* Kielland's *Skipper Worse*. Two dramas by Holberg and three by Oehlenschlaeger are assigned for outside reading. *Twice a week throughout the year.*

4. Ibsen's *Brand* and *Peer Gynt*, and selections from Norwegian and Danish poetry. *Twice a week throughout the year.*

5. History of Dano-Norwegian Literature. Broch and Seip's *Norsk og dansk Litteraturhistorie*, with lectures and papers presented by students on the authors under discussion. *Three hours a week throughout the year.*

6. Swedish Literature. Tegner's *Frithiofs Saga*, Runeberg's *Fänrik Stals Sägner*, Vinsnes and Aanrud's *Svenske Digtere*, and Warburg's *Svensk Litteraturhistoria*. *Twice a week throughout the year.*

7a. Lectures on early Scandinavian literature and antiquities, with illustrative readings in translation. *Once a week; first semester.*

7b. Lectures on modern Scandinavian authors and literary epochs, with illustrative readings in translation. *Once a week; second semester.*

A knowledge of the Scandinavian languages is not required for courses 7a and 7b.

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For Undergraduates and Graduates.

8. Old Norse. Vigfusson and Powell's *Icelandic Prose Reader*, or Kahle's *Altisländishches Elementarbuch*, and Nygaard's *Udvalg af den norröne Literatur. Twice a week throughout the year.*
9. Modern Norwegian Literature. The critical reading of representative dramas and novels. The principal authors studied are Ibsen, Björnson, Lie, and Kielland. *Throughout the year; twice a week.*
10. Studies in Norwegian Poetry. Selections from Wergeland, Welhaven, Munch, Moe, Björnson, and Ibsen, to illustrate the different epochs in the development of modern Norwegian literature. *Once a week; first semester.*
11. Norwegian Dialect Writers. The principal authors considered are Aasen, Vinje, Garborg, and Sivle. Some attention is also given to the language reform movement. *Once a week; second semester.*
12. Scandinavian Literature. A general survey, with critical study of special periods. *Throughout the year; twice a week.*

GERMAN.

PROFESSOR HOHLFELD, PROFESSOR VOSS, ASSISTANT PROFESSOR STERLING, ASSISTANT PROFESSOR ROEDDER, DR. MEISNEST, DR. EVANS, DR. HANDSCHIN, DR. WERNAER, DR. VEERHUSEN, MR. GOODNIGHT, MISS HERFURTH, MR. HAERTEL, MR. HAUSSMANN, MR. ALLINGER, AND MR. PFUND.

The courses in German are divided into the following four groups:—

A. The elementary courses represent the work ordinarily done in first and second year classes, and are so graded as to meet the needs of high school graduates of different degrees of preparation. Students without previous work in German enter course 1; those who have had two years of high school German enter course 2, 2M, 2S, 2C, or 2E; those who have taken three years of German in the high school enter course 2A, completing the equivalent of course 2 by the end of the first semester. Freshmen with four years of high school German are not allowed to enter any of these elementary courses. They should regularly take up German 3A,

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unless their general course of study requires a special class in German, like 3S, 3C, or 3E. Students who possess a thorough practical knowledge of German considerably in advance of what their high school work indicates, should present themselves for an informal examination with a view of being assigned to more advanced classes. Credit for the omitted lower work will, however, be granted only in exceptional cases, regulated by special rules of the Faculty, and never without a formal examination.

B. The advanced practice courses differ much in character and grade of work, but have this in common that they do not mainly deal with literature, being intended for specific practical ends, definitely stated in each case. None of these courses are absolutely required of students wishing to study German solely for its literature. Such students after completing course 2, should select their work from courses 15 to 20, though some of the work in composition or conversation may be advisable in connection with their literary courses. Students taking their major in German are required to take at least course 10 or 12 from this group.

C. The courses from 15 to 48 are literary courses of very different degrees of advancement, those from 40 to 48 not being open to undergraduate students. Many of the less advanced courses, from 15 to 27, though different in subject matter, are of about the same grade of difficulty. Elections from this group, therefore, are subject to certain restrictions stated below, after course 27. Ordinarily, about twelve semester hours from courses 15 to 27 will be adequate preparation for the more advanced work in literature, as well as for the more elementary courses in philology. Students intending to specialize in German literature are advised to do related work in philosophy, in medieval and modern history, and in English literature. They should also pursue, to a fair degree of advancement, the study of at least one other foreign language and literature, ancient or modern.

D. The courses from 50 to 65 are devoted to work in German philology. While most of these courses are intended for graduate students working for a higher degree in German, some of them are well suited to the needs of advanced undergraduates. This is specially true of courses 50 and 51, which are required of all students expecting to teach German as their principal subject; but also of courses 52, 53, 57, and 59, all of which are so conducted as to be of direct benefit to properly qualified seniors.

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Major in German.

Students beginning the study of German in the University with course 1 will generally not be able to choose German as their major to good advantage. Students taking course 2 in their Freshman year should, as a minimum, devote to German on an average eight semester hours a year for the remaining three years, taking thus a total of twenty-four semester hours in advance of course 2. At least eight of these hours should represent class work in advance of course 27. This amount represents a minimum which will rarely prove sufficient in the case of those preparing to teach German as their principal subject. Of students of the latter class the following courses are required: 10 or 12, 14, 30 or 33, 50 and 51.

Germanistische Gesellschaft.

The Germanistische Gesellschaft is an organization of students and instructors interested in the study of the German language and literature and of German life and culture. There are two general meetings each month, on Wednesday evenings, the programs consisting of lectures, recitations, dramatic performances, singing, and social entertainments. All students specializing in German, preparing to teach German, or wishing to keep up their knowledge of German, are urged to attend regularly.

ELEMENTARY COURSES.

For Undergraduates.

1. Beginners' German. Grammar and easy readings, with practice in speaking and writing German. *Four hours a week throughout the year.* Seven sections. Dr. EVANS, DR. HANDSCHIN, Dr. WERNAER, Dr. VEERHUSEN, Miss HERFURTH, Mr. HAUSSMANN, and Mr. ALLINGER.

1B. Beginners' German. Second semester only. In this course the work of the first semester is repeated in a special section. Students beginning the study of German at this time may complete course 1 in the Summer Session. *Second semester; M., Tu., Th., F., at* 3. Dr. VEERHUSEN.

2. Second Year German. Modern prose, narrative and dramatic, selected lyrics, and a drama of Lessing or Schiller. Review of the forms, and elementary syntax. Written and oral exercises. For students who have had course 1, or two

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years of high school German, or an equivalent. Engineering freshmen and students specializing in science may take course 2 in place of 2E or 2S. *Four hours a week throughout the year.* Eight sections. Dr. EVANS, Dr. WERNAER, Dr. VEERHUSEN, Mr. GOODNIGHT, Mr. HAERTEL, Mr. ALLINGER, and Mr. PFUND.

2M. Second Year German. Especially arranged for students of Latin or Greek, who should be able to cover more ground than is gone over in course 2. *Throughout the year; Tu., W., Th., F., at* 10. Dr. VEERHUSEN.

2S. Second Year German. For students specializing in science. Identical with course 2, except that easy scientific prose is introduced in part of the second semester. *Throughout the year; Tu., W., Th., F., at* 11. Assistant Professor STERLING.

2C. For freshmen in the Course in Commerce. Modern prose and poetry. Practice in speaking and writing German. *Throughout the year; Tu., W., Th., F., at* 9. Assistant Professor ROEDDER.

2E. For Engineering freshmen. A regular second year's course, like course 2, except that easy scientific prose is introduced in part of the second semester. *Four hours a week throughout the year.* Four sections. Dr. MEISNEST, Dr. EVANS, Dr. HANDSCHIN, and Mr. HAUSSMANN.

2A. Advanced Second Year German. Open to students who enter the University with three years of high school German. *Throughout the year; Tu., W., Th., F., at* 8. Mr. GOODNIGHT. *Tu., W., Th., F., at* 3. Miss HERFURTH.

ADVANCED PRACTICE COURSES.

Primarily for Undergraduates.

3A. Third Year German. Modern and classical prose and verse. Oral and written work. Study of syntax. Open to freshmen who enter the University with four years of high school German. *Throughout the year; M., Tu., W., F., at* 12. Dr. MEISNEST.

3S. Scientific German. For students specializing in science who have had course 2 or 2S. Rapid reading of scientific prose. *Throughout the year; W., F., at* 9. Assistant Professor STERLING.

3C. For sophomores in the Course in Commerce. Reading, con-

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versation, and composition. *Throughout the year; Tu., Th., at* 11. Dr. VEERHUSEN.

3E. For Engineering Sophomores. Advanced prose on subjects of technical science. *Half-year course, given in both semesters.* Three sections. Dr. MEISNEST and Mr. GOODNIGHT.

4C. For juniors in the Course in Commerce. Reading, conversation, composition, chiefly on topics of special value to students of commerce. *Throughout the year; Tu., Th., at* 9. Assistant Professor STERLING.

5C. For seniors in the Course in Commerce. A continuation of the work of 4C. *Throughout the year; Tu., Th., at* 11. Assistant Professor ROEDDER.

6. Grammar and Composition. Open to students who have had course 2 or an equivalent, but desire more practice in grammar and prose composition. Without special permission, this course can be taken only in connection with some other course in the department. *W., at* 12. MISS HERFURTH.

7. Elementary Conversation. Practice in class; the work at home not to exceed one hour a week. Open on the same conditions as course 6. *One hour credit. Tu., Th., at* 11, Dr. HANDSCHIN. *Tu., Th., at* 3, Mr. GOODNIGHT.

8. Dramatic Reading. Recitation of poems and reading of dramas with divided parts, with special attention to pronunciation and expression. Open, after consultation, to students of fair advancement in German. Not open to freshmen. *One hour credit. Th., at* 5. Dr. MEISNEST.

9. Critical German Prose. Rapid reading in history, biography, criticism, etc. Especially designed for students who wish to read with ease German books on historical, philosophical, and literary topics. Open to students who have had at least course 2 or an equivalent. *Tu., Th., at* 12. Mr. GOODNIGHT.

10. Composition and Conversation; with special work in German syntax. Open to students who have had at least four semester hours in advance of course 2. *Tu., Th., at* 12. Assistant Professor ROEDDER and Mr. HAERTEL. *W., F., at* 11. Dr. MEISNEST.

12. Advanced practice in writing and speaking German. Discussions and essays on topics of German life and literature. Open to advanced students specializing in German. This course is decidedly in advance of course 10; but ordinarily

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students should take only one of the two courses. *W., F., at* 10. Dr. EVANS.

14. Teachers' Course. A critical study of the methods of teaching modern foreign languages. Lectures, reports, discussions, and practice teaching. Elementary phonetics and review work in grammar. Open to seniors and graduate students. *Th., at* 3. Professor HOHLFELD and Professor VOSS.

Courses 12 and 14 can be counted by graduate students taking German as their major or minor.

GERMAN LITERATURE.

Primarily for Undergraduates.

15. Advanced Prose and Verse. Selections from eighteenth and nineteenth century authors, and written exercises (once every two weeks). For students who have had course 2, 2M, or 2A, and intend to specialize or do advanced work in German. Not open to students who have had 3A. *M., Tu., Th., at* 10, Mr. GOODNIGHT. *M., W., F., at* 3, Dr. EVANS.

16. Advanced Prose and Verse. Similar to course 15, but more advanced. Open to students who have had 2A or 3A. Courses 15 and 16 are mutually exclusive of each other, no student being allowed to count more than one of the two. *Three hours a week throughout the year.*

To make suitable four or five hour courses, 15 or 16 should be combined with 6, 7, 9, 17, 18, or 20.

17. Modern German Dramatists. Grillparzer (*first semester*) and Hebbel *(second semester)*, or other authors like Ludwig, Wildenbruch, and Hauptmann. *Tu., Th., at* 11. Dr. WERNAER.

18. Modern German Novelists. Readings from authors like Scheffel, Freytag, Keller, C. F. Meyer, and Sudermann. *M., W., F., at* 11. Dr. HANDSCHIN.

20. Schiller. Introductory study of his life, and selections from his works. *Maria Stuart* or *Braut von Messina*, and *Wallenstein*. Two sections: Section 1 conducted chiefly in English, *W., F., at* 10; section 2 conducted in German, *W., F., at* 11. Assistant Professor STERLING and Dr. VEEBHUSEN.

Courses 17 to 20 are primarily intended for students who have had course 2 or its equivalent. Students having had

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more than four semester hours in advance of course 2 will be required to do additional work to receive full credit.

21. Modern German Poetry. *First semester*: Lyrics and ballads. *Second semester*: Epic poems, like Scheffel's *Der Trompeter von Säckkingen* and Baumbach's *Frau Holde*. *M., W., F., at* 12. Assistant Professor STERLING.

23. Goethe. Introductory study of his life, and selections from his works. *Goetz* and *Egmont*. *Tu., Th., at* 9. (Omitted in 1906-07.) Professor VOSS.

24. Lessing. Introductory study of his life, and selections from his works. *Emilia Galotti*, *Nathan*, and prose selections. *Tu., Th., at* 9. Alternates with 23. Professor VOSS.

26. Lessing, Goethe, and Schiller. An introduction to the classical literature of the eighteenth century. *Laokoon*, or other critical writings of Lessing, Goethe's *Tasso*, and selected poems, Schiller's esthetic writings, or his correspondence with Goethe. *Tu., Th., at* 12. (Omitted in 1906-07.) Professor HOHLFELD.

27. Kleist, Uhland, and Heine. Selected works with introductory studies of their lives. *Tu., Th., at* 12. Alternates with 26. Professor HOHLFELD.

Courses 21 to 27 are primarily intended for juniors specializing in German, but are open to all others who have had at least six semester hours in advance of course 2.

Without special permission, no student is allowed to count more than two of the courses from 15 to 20, and three from 21 to 27.

For Undergraduates and Graduates.

30. Goethe's Faust. Interpretation and discussion of both parts, with informal lectures and collateral reading in Faust literature. Conducted in English. Open to juniors and seniors who have had at least one of the courses from 21 to 27. *Tu., Th., at* 9. (Omitted in 1905-06.) Professor HOHLFELD.

31. Introduction to the History of German Literature. English lectures, and private reading of representative works of German literature in English translations. This course does not require a particular knowledge of the language, and is primarily intended for students who do not specialize in German. Not open, without special permission, to

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students below the junior class. *Tu., at* 12. Assistant Professor STERLING.

33. General History of German Literature. A general survey for students specializing in German. Lectures, reports, and readings. Francke's *History of German Literature* and Max Müller's *German Classics*. *Tu., Th., at* 9. (Omitted in 1906-07.) Professor HOHLFELD.

34. Nineteenth Century Authors. Lectures, collateral reading, and exercises in literary criticism. Special attention is given to the development of the novel and, in a less degree, of lyric poetry. The drama receives but little attention in this course. *S.*, 9 *to* 11. Dr. HANDSCHIN.

36. Popular German Literature. *Volkslied, Märchenliteratur,* and *Volksbücher (first semester);* modern dialect literature (*second semester*). *Twice a week.* (Omitted in 1906-07.) Assistant Professor ROEDDER.

38. Shakespeare in Germany. A study of the more important translations of Shakespeare into German, and of the influence of Shakespeare on German literature, especially in the 17th and 18th centuries. *Second semester; M., F., at* 12. (Omitted in 1905-06.) Dr. MEISNEST.

Primarily for Graduates.

40. The Romantic School in Germany. After tracing the genesis of 18th century Romanticism, the course has for its aim a systematic study of the philosophic, literary, and cultural elements of the Romantic School. *Second semester; three hours a week.* Dr. WERNAER.

41. History of the German Drama. The course traces the development of the German drama up to the time of Lessing. Special attention is given to the religious drama, the *Fastnachtspiel*, the *Schuldrama*, the English influence of the seventeenth, and the French influence of the first half of the eighteenth century. *M.*, 7 *to* 9 P. M. (Omitted in 1906-07.) Dr. EVANS.

44. History of Middle High German Literature. This course does not deal with the textual interpretation of the documents themselves, but with the evolution of the literary movements during the period from the twelfth to the end of the fifteenth century. Special attention will be given to the corresponding tendencies in politics, social life, reli-

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gion, and art, as also to the later reappearance of medieval ideals in modern literature. Open to students who have had course 52. *M.*, 7 *to* 9 P. M. (Omitted in 1905-06.) Dr. EVANS.

46. Literary Movements of the Eighteenth and Nineteenth Centuries. The work of this course changes from year to year, always centering around some general movement in the literature of the last two centuries. The following topics indicate the scope of the work: the renaissance of the middle ages; the growth of English influence in German literature; the evolution of realism in the 19th century; etc. *Tu., Th., at* 11. Alternates with course 47. (Omitted in 1905-06.) Professor HOHLFELD.

47. Pro-seminary in German Literature. The object of this course is, through the assignment of definite tasks of limited compass, to prepare first year graduate students for the more advanced work of the seminary proper. In the first semester the work will be based on representative poems of the eighteenth century, with special reference to questions of meter, literary style, and *Weltanschauung;* in the second semester some of the critical writings of Lessing and his contemporaries will be studied. *Tu., Th., at* 11. Alternates with course 46. (Omitted in 1906-07.) Professor HOHLFELD.

48. Seminary in German Literature. The aim of the seminary is to train properly qualified students in the scientific methods of the historical and critical study of literature The rotation of subjects forms a cycle of at least three years. In 1903-04, the work was in Goethe; in 1904-05, in the literature of seventeenth and the first half of the eighteenth century. In 1905-06, the work will be in the Storm and Stress movement (*first semester*) and in German Romanticism *(second semester). W.*, 3 *to* 5. Professor HOHLFELD.

For the work of the German Journal Club, see the announcement of the Graduate School.

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GERMAN PHILOLOGY.

PROFESSOR VOSS AND ASSISTANT PROFESSOR ROEDDER.

For Undergraduates and Graduates.

50. Introduction to the Historical Study of German, based on Behaghel, *Die deutsche Sprache.* Lectures and recitations. *First semester; M., W., at* 11. Professor Voss.

51. Introduction to the Study of Middle High German. Lectures and recitations. *Second semester; M., W., at* 11. Professor Voss.

Courses 50 and 51 are required of students who expect to teach German.

52. Advanced Middle High German. Studies in the language and literature of the twelfth and thirteenth centuries. Lectures and recitations. *Throughout the year; Tu., Th., at* 10. Alternates with course 53. Professor Voss.

53. Early Modern High German. Studies in the language and literature of the fifteenth and sixteenth centuries. Lectures and recitations. *Tu., Th., at* 10. Alternates with course 52. (Omitted in 1905-06.) Professor Voss.

54. Gothic Grammar, with readings from the Gospels. *First semester; twice a week.* Assistant Professor ROEDDER.

55. Old High German, with special reference to German life and culture. Braune's *Althochdeutsche Grammatik* and readings from Braune's *Althochdeutsches Lesebuch. Second semester; twice a week.* Assistant Professor ROEDDER.

56. Classical German Philological Literature. *Once a week.* Professor Voss.

57. Introduction to the Study of *Volkskunde.* Lectures and collateral reading. *First semester; once a week.* Assistant Professor ROEDDER.

58. Old Saxon, with special reference to Germanic life and culture. Holthausen's *Altsaechsisches Elementarbuch* and extracts from the *Heliand,* ed. Behaghel. *First semester; twice a week.* In alternate years. (Omitted in 1905-06.) Assistant Professor ROEDDER.

59. Germanic Mythology and Heroic Legends. Lectures and collateral reading. *Second semester; twice a week.* In alternate years. (Omitted in 1905-06.) Assistant Professor ROEDDER.

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Primarily for Graduates.

60. History of the Modern High German literary language. *First semester; W., at* 9. In alternate years. Professor Voss.

62. History of German Philology. Lectures, readings, and reports. *First semester; W., at* 9. In alternate years. (Omitted in 1905-06.) Professor Voss.

63. Philological Research. *Second semester; W., at* 9. Professor Voss and Assistant Professor ROEDDER.

64. Pro-seminary in German Philology. For 1905-06: Middle Low German texts (*first semester*); Gothic (*second semester*). For 1906-07: Old High German texts (*first semester*); Old Saxon texts (*second semester*). *S.*, 8 *to* 10. Assistant Professor ROEDDER.

65. Philological Seminary. The work of the seminary varies. While special attention is given to the classical writers of the Middle High German period, the other periods also, especially the transition period from Old to Middle High German, and from Middle to Modern High German, will be studied. Hartmann von Aue, Gottfried von Strassburg, Wolfram von Eschenbach, *Deutsche Gedichte des XI. und XII. Jahrhunderts*, Reinke de Vos, Sebastian Brant, Thomas Murner, Hutten, Luther, Fischart, and Hans Sachs. *Throughout the year; Tu.*, 3 *to* 5. Professor Voss.

ENGLISH.

PROFESSOR FREEMAN, PROFESSOR FRANKENBURGER, PROFESSOR HUBBARD, ASSOCIATE PROFESSOR LATHROP, ASSISTANT PROFESSOR PYRE, ASSISTANT PROFESSOR CAIRNS, ASSISTANT PROFESSOR DODGE, ASSISTANT PROFESSOR BROWN, DR. BEATTY, DR. BLEYER, MR. COOK, DR. MORRILL, MR. DICKINSON, MR. ADAMS, MR. GENTNER, MR. NORTHROP, MISS LAMONT, AND MR. OLBRICH.

RHETORIC AND ORATORY.

Primarily for Undergraduates.

1. Freshman English. English Prose Style. Composition. The elements of effective writing in prose, based upon direct study of selected authors, with training in composition. *Three hours a week throughout the year.* Twenty-three sections. For hours and rooms see time table of required

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studies. Required of freshmen in all courses. Professor HUBBARD, Associate Professor LATHROP, Assistant Professor PYRE, Assistant Professor CAIRNS, Dr. BEATTY, Dr. BLEYER, Mr. COOK, Dr. MORRILL, Mr. DICKINSON, Mr. ADAMS, Mr. GENTNER, and Mr. NORTHROP.

2. Sophomore Composition. Elective for those who have finished the required English of the freshman year. This course may not be elected by semesters. No credit will be given for less than the whole course. *Tu., Th., at* 8, 11, and 12. Assistant Professor DODGE, Assistant Professor BROWN, Mr. DICKINSON, and Dr. MORRILL.

19a. Newspaper Writing. Practice in reporting, correspondence, preparation of special articles, and other details of newspaper work. Open to those who have completed course 1. *First semester; Tu., Th., at* 10. Dr. BLEYER.

19b. Narration. The study of some representative forms of the story, with exercises in plot-structure and criticism. Elective for juniors and seniors, and for sophomores who have done very good work in English 1. *Second semester; Tu., Th., at* 10. Dr. BEATTY.

3. Development of Oratorical Themes. Lectures on the theory of oratory. Study of the oration from the point of view of purpose, with analysis of oratorical masterpieces. Preparation and delivery of original orations. *Throughout the year.* Mr. OLBRICH.

4. Advanced Rhetoric. Open to those who have completed courses 1 or 2. The course aims to give (a) a comprehensive knowledge of rhetorical science, keeping in close touch with the philosophy of literary expression; (b) practice, with personal criticism, in all forms of composition, each student being allowed to lay special stress on such lines as he desires. *Throughout the year; M., W., F., at* 12. Professor FRANKENBURGER.

5. Forensics. The general subject of argumentation and of public discussion, treated both from the side of construction, and from the side of delivery. Special attention will be paid to extempore speaking and debates. *Throughout the year; M., W., F., at* 11. Professor FRANKENBURGER.

6. Advanced Composition I. Elective for juniors and seniors, and for sophomores who have done very good work in course 1. This course may not be elected by semesters.

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No credit will be given for less than the whole course. *Throughout the year; M., W., F., at* 11. Assistant Professor DODGE.

7. Advanced Composition II. Exposition. Study of such authors as Coleridge, Lyell, Huxley, Darwin, Bagehot; practice in expository composition, with reference to the special studies of individual students. Open to those who have had either course 2 or 6, and to others with the consent of the instructor. *Throughout the year; Tu., Th., at* 11. Associate Professor LATHROP.

10. Dramatic Reading. The study of Shakespeare as a dramatic poet. The reading of *Macbeth, Othello, Merchant of Venice,* and *Hamlet.* Parts of these plays are rendered by the class. Open to those who have taken course 12, or its equivalent. *Throughout the year; Tu., Th., at* 12. Professor FRANKENBURGER.

11. Rhetoric. Special emphasis on argumentation and persuasion. Practice in the writing of argumentative composition, with a view to the acquisition of an effective style in debate. Lectures with supplementary readings. *Throughout the year; Tu., Th., at* 9. Mr. OLBRICH.

12. Elocution. Lectures will be given upon vocal physiology, the proper use and care of the voice, reading and gesture. Daily practice in vocal expression. *Throughout the year; M., W., F.* Miss LAMONT and Mr. OLBRICH.

13. Oratorical Delivery. Study of the principles of public speaking. The purpose of this course is the cultivation of a natural and direct style in oral expression. Open to those who have had previous preparation. *Throughout the year; M., W., F.* Mr. OLBRICH.

14. Elocution. Reading, declamation, and lectures. *Second semester; M., W., F., at* 9. Miss LAMONT and Mr. OLBRICH.

15. Elocution and Oratory. (Elective in the Law School.) Voice training for quality and economy. Practice in reading and declamation from the great orators. Lectures on principles of gesture, with practical exercises. Practice in extempore speaking. Lectures and class discussions on the questions which interest the lawyer as a public speaker. *Throughout the year; Tu., Th., at* 11. Mr. OLBRICH.

16. Declamation. Development of power and originality in the interpretation of literature, with a view to public presen-

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tation. Private rehearsals each week. Open to those who have had previous preparation. *Throughout the year; Tu., Th.* Miss LAMONT.

For Undergraduates and Graduates.

18. Dramatic Seminary. *Throughout the year; W.*, 4 *to* 6. Professor FRANKENBURGER.

8. Rhetorical Seminary. The seminary for the year 1905-06 will study the philosophy of the oration as revealed in the great American orations and in the lives of the orators. *Throughout the year; F.*, 4 *to* 6. Professor FRANKENBURGER.

9. Literary Criticism. The course will consist of a consideration of the main principles of literary criticism, and a study of the ballads and romances, as an introduction to the study of comparative literature. *Throughout the year; Tu., Th., at* 9. Dr. BEATTY.

The advanced work in rhetoric and composition in the University is fairly equal in scope and variety to the needs of the student who is looking toward journalism. For facility in composition course 6 is provided, which meets three times a week for a year, and requires from each student a written paper at every meeting. Those finishing this course may enter upon course 7 for another year. Course 4 in advanced rhetoric, three times a week for a year, gives the philosophy of rhetorical expression, with practice in writing and criticism, and practical talks on preparation of manuscript, proof-reading, etc. Following this is course 9, which takes up style and literary criticism, twice a week for a year. These courses combined furnish ample practice in the writing of fiction, poetry, dramatic composition, and critical reviews.

ENGLISH LANGUAGE.

Primarily for Undergraduates.

20. Anglo-Saxon and Middle English. Required of students who take English as their major. The work of the first semester may be elected without work of the second semester. *First semester*, Anglo-Saxon; *second semester*, Middle English. *Throughout the year; M., W., F., at* 9. Professor HUBBARD.

23. Modern English Grammar. A course for teachers of English. *Second semester; Tu., Th., at* 8. Professor HUBBARD.

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For Undergraduates and Graduates.

21. Anglo-Saxon Poetry. Study of selections, survey of Anglo-Saxon literature. Open to students who have taken the Anglo-Saxon of course 20. *Second semester; M., W., F., at* 8. Professor HUBBARD.

22. Beowulf. Introduction to the study of old Germanic life. *First semester; M., W., F., at* 8. Professor HUBBARD.

25. Principles of Semasiology. A study of the general principles of language development in relation to changes in the meaning of words; to be followed in the second semester by a detailed study of these changes in meaning as illustrated by English and other languages. *Throughout the year; Tu., Th., at* 12. Dr. BLEYER.

For Graduates.

24. English Philology Seminary. Critical study of texts; historical grammar; dialects. *Two hours a week throughout the year.* Professor HUBBARD.

ENGLISH LITERATURE.

Primarily for Undergraduates.

30. General Survey of English Literature. This course is prerequisite to all other courses in English literature except English 48. *Throughout the year; M., W., F., at* 8, 9, 10, and 11. Open to students who have taken course 1, or its equivalent. Required of sophomores who take English as their major. Assistant Professor PYRE, Assistant Professor CAIRNS, Assistant Professor BROWN, and Dr. BLEYER.
Section 1. *M., W., F., at* 8. Assistant Professor BROWN.
Section 2. *M., W., F., at* 9. Assistant Professor PYRE.
Section 3. *M., W., F., at* 9. Assistant Professor BROWN.
Section 4. *M., W., F., at* 10. Dr. BLEYER.
Section 5. *M., W., F., at* 11. Assistant Professor CAIRNS.

31. Chaucer. History of the literature of the fourteenth and fifteenth centuries. *First semester; M., W., F., at* 12. Assistant Professor BROWN.

37. Study of Longer Poems. Lectures, collateral reading, and papers. (a) National epics. *First semester; Tu., Th., at* 5. (b) Narrative poems. *Second semester; Tu., Th., at* 5. Given in alternate years. (Omitted in 1906-07.) Professor FREEMAN.

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40. American Literature. A general survey of literary writings in America from the earliest times. Must be preceded by course 1, and should be preceded or accompanied by course 30. *Throughout the year; Tu., Th., at* 9 *and* 10. Professor CAIRNS.

48. Introduction to English Poetry. In this course a small number of representative poems will be studied thoroughly. Designed primarily for students who expect to elect only one course in English, and open to election by all students. Students who desire to elect any other course in English literature after taking English 48, will be required to take English 30 before or with the advanced course. *Throughout the year; Tu., Th., at* 8. Associate Professor LATHROP.

For Undergraduates and Graduates.

32a. The Sixteenth Century. This course covers the prose and the poetry of the period, exclusive of the drama. It deals briefly with the Revival of Learning, and at length with the literature from Wyatt to the death of Spenser. Some attention is given to the influence of Italy and France. Students are required to do considerable reading, and to write papers regularly on their reading. *First semester; M., W., F., at* 9. Alternates with course 33. (Omitted in 1905-06.) Assistant Professor DODGE.

32b. The Seventeenth Century. *Second semester; M., W., F., at* 9. Alternates with course 33. (Omitted in 1905-06.) Assistant Professor DODGE.

33. The Eighteenth Century. From Dryden to Cowper. Lectures, collateral reading, and papers. *Throughout the year; Tu., Th., at* 9 Alternates with courses 32a and 32b. Associate Professor LATHROP.

34. The English Romantic Movement. *First semester; M., W., F., at* 10. Assistant Professor PYRE.

35. The Victorian Era. *Second semester; M., W., F., at* 10. Assistant Professor PYRE.

36. The Drama. Shakespeare. A part of the first semester is devoted to history of the English drama, the remainder of the year to Shakespeare. Required of seniors taking English as their major. *Throughout the year; M., W., F., at* 11. Professor FREEMAN.

38. English Lyric Poetry. *Throughout the year; M., W., F., at*

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10. Given in alternate years. (Omitted in 1905-06.) Professor FREEMAN.

39. The Novel. The development of the English novel. Study of representative novels. *Throughout the year; Tu., Th., at* 10. Associate Professor LATHROP.

41. Spenser. The course aims to cover the greater part of Spenser's poetical work. *First semester; M., W., F., at* 9. Assistant Professor DODGE.

42. Poetics. The science of verse. The history of English verse-forms. *Second semester; Th.,* 2 *to* 4. Assistant Professor PYRE.

43. The English Essayists. *Second semester; M., W., F., at* 9. Assistant Professor DODGE.

45. Browning. The interpretation of representative poems. *First semester; M., W., F., at* 12. Professor HUBBARD.

46. Comparative Literature. Medieval literature in French and English, with especial reference to the *Story of King Arthur.* Some acquaintance with one of the following subjects is expected of students who elect this course: Anglo-Saxon, Chaucer, or Old French. *Second semester; M., W., F., at* 12. Dr. BROWN.

47. Significant Movements in American Literature. Open to students who have completed course 40, or its equivalent. The course may be elected by semesters. *Tu., Th., at* 8. Assistant Professor CAIRNS.

49. English Biography. Lectures on English biographical writing, with detailed study of classic biographies. *First semester; Tu., Th., at* 11. Assistant Professor PYRE.

50. Teachers' Course. Open to seniors in English. *Throughout the year; M., at* 4. Associate Professor LATHROP.

Primarily for Graduates.

44. English Literature Seminary. Subject for 1904-05: Dryden and his Contemporaries. *Throughout the year; Tu.,* 4 *to* 6. Professor FREEMAN, Professor HUBBARD, and Assistant Professor DODGE.

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MATHEMATICS.

PROFESSOR VAN VELZER, PROFESSOR SLICHTER, ASSISTANT PROFESSOR SKINNER, ASSISTANT PROFESSOR DOWLING, MR. WOLFF, MR. PERSONS, MISS ALLEN, MR. RANUM, MR. SUTER, AND MR. RASTALL.

Arrangement of Courses.

The courses in Mathematics are divided into three groups, as follows:—

A. Courses 1 to 7 are planned to give a working knowledge of elementary mathematics. All courses are elective except courses 1 and 7, required of students in the Course in Commerce.

Students electing mathematics with a view to teaching it will be expected to complete at least courses 3 and 4, or 4 and 5.

It will be advantageous for all students expecting to elect mathematics to present at least ½ a unit of preparatory work in algebra in addition to the two units in mathematics required for entrance.

B. Courses 11 to 19 are designed for students who desire to continue mathematical study, and who have completed the requisite courses in group A.

C. Courses 20 to 37 are intended primarily for graduate students. They are designed to give some account of the various branches of modern mathematics.

Major in Mathematics.

The requirements for an undergraduate major in mathematics are, in addition to the thesis, 32 semester hours, as a minimum, selected as follows: Courses 1, 2, 4, and 5 from group A, and at least 16 semester hours from group B.

For Undergraduates.

1. Algebra. For students presenting one unit of algebra for entrance. A brief course in University algebra; prerequisite to all other courses in mathematics except 2. *Three hours a week for one semester.*

   First semester:

   Section 1, *M., W., F., at* 8. Assistant Professor SKINNER.
   Section 2, *M., W., F., at* 9. Professor VAN VELZER.
   Section 3, *Tu., Th., S., at* 9. MR. RANUM.

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Section 4, *M., W., F., at* 10. Miss ALLEN.
Section 5, *Tu., Th., S., at* 10. Assistant Professor SKINNER.
Section 6, *Tu., Th., S., at* 11. Mr. RANUM.
Section 7, *M., W., Th., at* 12. Miss ALLEN.

For Students in the Course in Commerce.

Section 8, *M., W., F., at* 8. Miss ALLEN.
Section 9, *M., W., F., at* 8. Mr. RASTALL.
Section 10, *Tu., Th., S., at* 10. Mr. RASTALL.

Second semester:

M., W., F., at 10. Professor VAN VELZER.

2. Trigonometry. Plane trigonometry and an introduction to spherical trigonometry; prerequisite to all other courses in mathematics except 1, 3, and 7. Open to all students who have had logarithms. *Three hours a week for one semester.*

   First semester: *M., W., F., at* 10. Professor VAN VELZER. *Second semester*: Sections and instructors are the same as in sections 1 to 7 in course 1.

3. Algebra. For students presenting one and one-half units of algebra for entrance and elective to students who have taken course 1. Should be preceded by course 2 or taken along with it. *Three hours a week for one semester. First semester; M., W., F., at* 9; *second semester; Tu., Th., S., at* 10. Assistant Professor SKINNER.

4. Analytic Geometry. Elementary course. Straight line, conic sections, general equation of the second degree, transcendental curves, and an introduction to geometry of three dimensions. *Throughout the year; Tu., Th., at* 10. Professor VAN VELZER and Assistant Professor DOWLING.

5. Calculus. Elementary course. Differentiation and integration of functions of one variable with the usual geometric applications. *Throughout the year; M., W., F., at* 10. Assistant Professor DOWLING and Assistant Professor SKINNER.

7. Commercial Algebra. Required of students in the Course in Commerce. *Second semester; three hours a week*, at hours as in sections 8, 9, and 10 in course 1. Assistant Professor DOWLING, Miss ALLEN, and Mr. RASTALL.

For Undergraduates and Graduates.

11. Calculus. Advanced. Partial derivatives and multiple in-

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tegrals with the usual geometric applications. *Throughout the year; Tu., Th., at* 9. Assistant Professor SKINNER.

12. Differential Equations. Ordinary and partial differential equations with a few geometric and mechanical applications. Murray's *Differential Equations* is used as a text. This course must be preceded by course 11 or be taken along with it. *Throughout the year; M., at* 8, *Tu., Th. at* 9. Professor VAN VELZER.

13. Theoretical Mechanics. An elementary course in analytical mechanics. This course may be taken by those who have had analytic geometry and calculus. *Throughout the year; M., W., F., at* 11. Professor SLICHTER.

14. Analytic Geometry of Two Dimensions. An advanced course dealing with modern methods in plane analytic geometry. Must be preceded by course 4. *Throughout the year; M., W., F., at* 9. Professor VAN VELZER.

15. Projective geometry. Lectures based upon Reye's *Geometrie der Lage. Throughout the year; Tu., Th., at* 9. Assistant Professor DOWLING.

16. Analytic Geometry of Three Dimensions. This course should be preceded by course 11 or taken with it. *Throughout the year; Tu., Th., at* 9. Assistant Professor SKINNER.

17. Quarternions. *Second semester, in alternate years; M., W., F., at* 12. Assistant Professor SKINNER.

18. Theory of Probabilities. A course in this subject adapted to the needs of students of science and economics will be given occasionally. The mathematics of the freshman year is a prerequisite. *Either semester; twice a week.* Professor SLICHTER.

19. Differential Geometry. The application of the differential calculus to the geometry of twisted curves and surfaces. *First semester in alternate years; M., W., F., at* 12. Assistant Professor SKINNER.

Primarily for Graduates.

20. Elliptic Functions. This course must be preceded by course 12. *Throughout the year; M., W., F., at* 9. (Omitted in 1905-06.) Assistant Professor DOWLING.

21. Theory of Functions. *Throughout the year; M., W., F., at* 9. Alternates with course 20. Assistant Professor DOWLING.

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22. Newtonian Potential Function. Lectures and required readings on the theory of potential with an introduction to spherical harmonics. *Twice a week for one year.* (Omitted in 1905-06.) Professor SLICHTER.

23. Fourier Series and Spherical Harmonics. The theory of the solution of the fundamental equations of applied mathematics is developed, and application made to a variety of scientific problems. An harmonic analyzer of eighty elements is available for use in this course. *Throughout the year.* (Omitted in 1905-06.) Professor SLICHTER.

24. Advanced Projective Geometry. Continuation of course 15. Lectures based on Reye's *Geometrie der Lage.* (Omitted in 1905-06.) Assistant Professor DOWLING.

30. Theoretical Hydrodynamics. Lectures on fluid motion. *Twice a week for one year, in alternate years.* A course in the theory of elasticity may be substituted for this course. Professor SLICHTER.

32. Theory of Invariants. This course must be preceded by courses 3 and 11. *Throughout the year, in alternate years; M., W., at* 2. (Omitted in 1905-06.) Assistant Professor SKINNER.

33. Groups of Finite Order. *Throughout the year, in alternate years; M., W., F., at* 12. (Omitted in 1905-06.) Assistant Professor SKINNER.

34. Theory of Numbers. Congruences, quadratic residues, quadratic forms, etc. The work is based on Dirichlet's *Zahlentheorie. Throughout the year; Tu., Th., at* 11. Professor VAN VELZER.

35. Higher Plane Curves. Presented from the point of view due to Clebsch as it has been perfected by Brill and Noether. *Twice a week for one year.* Assistant Professor DOWLING.

36. Seminary Courses in Pure Mathematics. These courses vary from year to year according to the needs of students in the department. The aim is to make students acquainted with the literature of the subject under consideration, and to enable them to carry on research work. For 1905-06 the subject is: Groups of linear algebraic substitutions. *Two hours a week.* Assistant Professor SKINNER.

37. Seminary Course in some subject in Applied Mathematics. *Two hours a week, throughout the year.* Professor SLICHTER.

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CHEMISTRY.

PROFESSOR DANIELLS, PROFESSOR KAHLENBERG, PROFESSOR KREMERS, ASSOCIATE PROFESSOR LENHER, ASSISTANT PROFESSOR HILLYER, ASSISTANT PROFESSOR FISCHER, DR. PATTEN, MR. SHINN, MR. BRANDEL, MR. BENNER, MR. TIBBALS, MR. HUTCHINS, MR. KEMMERER, MR. HOLTY, MR. NORTH, MR. RABAK, AND MR. M'DANIEL.

Primarily for Undergraduates.

1. General Chemistry. Lectures and laboratory work. *Full study throughout the year.* Associate Professor LENHER and assistants.
2. General Chemistry for Freshmen in the College of Engineering. *Two lectures, one recitation, and one three-hour laboratory period a week throughout the year.* Associate Professor LENHER and assistants.
3. General Chemistry. For students in Pharmacy; the laboratory work is especially designed for them. *Eight-fifths study for the first semester; three-fifths for the second semester.* Associate Professor LENHER and Mr. BRANDEL.
5. Research Work. Designed for students who desire to prepare a baccalaureate thesis in chemistry. Associate Professor LENHER.
10. Analytical Chemistry. Qualitative. *Throughout the year; with lectures and discussions once a week.* Professor DANIELLS and Mr. HUTCHINS.

10a. Qualitative Analysis. For students in Pharmacy. *Daily during the first half of the second semester.* Professor DANIELLS and Mr. BRANDEL.

12. Analytical Chemistry. For sophomore Engineers. *Two laboratory periods a week. First semester,* qualitative analysis. Professor DANIELLS and Mr. HUTCHINS.
13. Quantitative Chemical Analysis. For Engineers; continuation of course 11. The analysis of metals, ores, minerals, and economic products. *Three-fifths study throughout the junior year.* Professor DANIELLS and Mr. HUTCHINS.
14. Water Analysis. For students in Sanitary Engineering. *Second semester; five-fifths study.* Professor DANIELLS.
15. Quantitative Analysis. For students in Pharmacy. *Daily during the second half of the second semester.* Professor DANIELLS and Mr. BRANDEL.

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16. Toxicology, Urine Analysis, and Sanitary Water Analysis. Open only to those who have taken at least one semester of quantitative analysis. *Second semester, daily.* Professor DANIELLS.

20. Organic Chemistry. Lectures and laboratory work. *Full study throughout the year.* In the first semester the work will be chiefly on the elements of organic chemistry. *Lectures, M., W., F., with one recitation and four hours laboratory work a week.* In the second semester the work will be chiefly on aromatic compounds. As special topics unsaturated compounds and carbohydrates will be presented. A part of the laboratory time may be given to ultimate analysis. *Lectures, M., W., with one recitation and six hours laboratory work.* Assistant Professor HILLYER.

20b. Organic Chemistry. For students in Pharmacy. Recitations and laboratory work. *Second semester; two-fifths course.* Assistant Professor HILLYER and Mr. BRANDEL.

33. Physical Chemistry. Special laboratory course. For seniors in engineering who desire an acquaintance with the methods of physico-chemical measurement. *Full study during the first semester; hours to be arranged.* Professor KAHLENBERG and Mr. SHINN.

40. Advanced Chemistry. For students in Pharmacy. The first semester is devoted to inorganic, the second to organic chemistry. Course 1 is a prerequisite. *Full study throughout the year. Lectures and recitations, M., Th., F., at* 10. Professor KREMERS and Mr. RABAK.

41. Plant Chemistry. A three-fifths study supplementary to Pharmacognosy 2b. *Recitation, M., at* 9. Professor KREMERS and Mr. RABAK.

45. Alkaloid Assay. One-fifth required of students in the pharmacy course during the second semester. Additional work may be elected upon consultation. Assistant Professor FISCHER.

50. Assaying. A course in practical assaying. *Second semester; hours to be arranged.* Associate Professor LENHER and Mr. TIBBALS.

70. The Chemistry of Gas Manufacture. Lectures and presentation of reports by members of the class upon assigned topics. *Two-fifths credit. First semester; Tu., Th., at* 12. Dr. PATTEN.

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For Undergraduates and Graduates.

4. Chemical Preparations. Laboratory course in the preparation of typical inorganic compounds. *At least two periods a week.* Associate Professor LENHER.

11. Analytical Chemistry. Quantitative. *One lecture and four laboratory periods a week.* Professor DANIELLS and Mr. HUTCHINS.

21. Preparation of Organic Compounds. Lectures and recitations twice a week, with laboratory work. *First semester; full study.* Assistant Professor HILLYER.

22. Research in Organic Chemistry. Students desiring to become acquainted with the methods of research in organic chemistry may take work leading to senior theses or to theses for higher degrees. Assistant Professor HILLYER.

23. Seminary in Organic Chemistry. Advanced students meet weekly to report on assigned topics bearing on some phase of the literature of the great researches in organic chemistry, or on the lives of the men who have contributed to its advancement. Assistant Professor HILLYER.

24. Electrolysis and Electrosynthesis of Organic Compounds. Conferences once a week, with laboratory work. *Second semester; three-fifths study.* Assistant Professor HILLYER.

30. Physical Chemistry. Lectures and recitations supplemented by laboratory exercises in physico-chemical measurements. Must be preceded by chemistry 1. *Full study throughout the year. Lectures and recitations. First semester, Tu., Th., at* 8; *second semester, W., F., at* 8. Professor KAHLENBERG and Mr. SHINN.

31. Electrochemistry. Lectures and recitations twice a week. Laboratory work in electrochemical measurements supplements the lectures, and with them makes a full study. *First semester; lectures: W., F., at* 8; *laboratory work throughout the year.* Professor KAHLENBERG and Mr. SHINN.

32. Thermal Chemistry. *Second semester; lectures: M., at* 8; *and one three-hour laboratory period a week.* Professor KAHLENBERG.

42. Plant Chemistry. Supplementary to plant physiology; a full study is offered to botanical students. *Lectures and recitations: Tu., Th., at* 4. Professor KREMERS and Mr. RABAK.

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44. Chemistry of Alkaloids and their Assay. General survey course of the chemistry of alkaloids. *One lecture a week during the second semester.* Assistant Professor FISCHER.

46. Adulterations of Food Stuffs. A chemical study which may be supplemented by course 16b in botany. Assistant Professor FISCHER.

47. Research Work. Special subjects for senior theses or graduate work on the chemistry of volatile oils, of alkaloids, and on other subjects pertaining to pharmacy. *Work will be arranged upon consultation.* Professor KREMERS, Assistant Professor FISCHER, and Mr. BRANDEL.

Primarily for Graduates.

35. Advanced Physical Chemistry. Lectures on selected topics. In 1905 the lectures will be on the subject of photochemistry. *Second semester; Th., at* 8. Professor KAHLENBERG.

36. Advanced Electrochemistry. A course in the preparation of chemical compounds by means of electrolysis and the electric furnace. Weekly conferences accompany the laboratory work. *Full study throughout the year; hours to be arranged.* Professor KAHLENBERG and Mr. SHINN.

37. Research Work in Physical Chemistry. Students having sufficient training may take up research work in physical chemistry, for which every facility is furnished. This course is especially designed for graduates seeking higher degrees. *Full study throughout the year; hours to be arranged.* Professor KAHLENBERG.

38. Seminary in Physical Chemistry. Original articles of importance will be studied in detail, with a view to broaden and deepen the understanding and to act as a stimulus to further research. *At least once a week throughout the year.* Professor KAHLENBERG.

43. Chemistry of the Volatile Oils, including their botanical relation and assay. Work arranged upon consultation with the instructor. Professor KREMERS.

51. Advanced Inorganic Chemistry. Special attention is given to the discussion of modern theories of chemistry. *Lectures, M., W., at* 2. Associate Professor LENHER.

52. Inorganic Preparations. This course is preliminary for

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those intending to pursue research work in inorganic chemistry. *Laboratory work with one lecture or conference a week.* Associate Professor LENHER.

53. Research Work in Inorganic Chemistry. Full facilities are offered to those desiring to study systematically some of the more important problems in inorganic chemistry. Associate Professor LENHER.

54. Seminary. In 1905-06 special topics in inorganic chemistry will be studied, reference being constantly made to the original published matter. Associate Professor LENHER.

PHYSICS.

PROFESSOR SNOW, PROFESSOR TROWBRIDGE, ASSOCIATE PROFESSOR MENDENHALL, MR. MILLER, MR. TAYLOR, MR. COLTON, MR. TERRY, MR. ANGELL, MR. BISHOP, MR. ANDERSON, MR. WORTHING, MR. WETZEL, MR. INGERSOLL.

Following the general lectures and introductory laboratory practice given in course 1, this department offers advanced work which may be divided into two general lines. Courses 2 to 7 are arranged for those who are desirous of obtaining a more special knowledge of some of the newer developments in physics, or for those who are preparing to teach. Especial emphasis is laid upon courses 2 and 3, which are teachers' courses, the aim here being to train the student in the clear presentation of this study, and to acquaint him with the details of manipulation of demonstrational apparatus. Courses 8 to 19 are designed for those who are preparing to do special work in physics, and for these courses an adequate mathematical preparation is a prerequisite.

Primarily for Undergraduates.

1. General Lectures and Introductory Laboratory Practice. This course is open to election by all students, and may be taken without difficulty by those who have not had the mathematics of the freshman year. *A full study throughout the year.* Lectures: *M., Tu., W., Th., at* 12. Professor SNOW. One recitation by the class in smaller sections. Mr. COLTON. Laboratory practice, *twice a week at hours to be arranged.* Mr. MILLER, Mr. ANGELL, Mr. ANDERSON, Mr. BISHOP, Mr. WORTHING, and Mr. WETZEL.

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For Undergraduates and Graduates.

2a. Advanced Course of Experimental Lectures. Heat and Light. *First semester; M., W., F., at* 2. Associate Professor MENDENHALL.

2b. Advanced Course of Experimental Lectures. Electricity and Magnetism. *Second semester; M., W., F., at* 2. Professor TROWBRIDGE.

Together with the accompanying laboratory practice (courses 3a and 3b), courses 2a and 2b are especially adapted to the needs of those expecting to teach. With this end in view, the lecture demonstrations are performed by the students before the class, thus giving each person practice in the presentation and illustration of special topics.

3a. Advanced Laboratory Practice. Heat and Light. *First semester; Saturday* 9 *to* 1. Associate Professor MENDENHALL.

3b. Advanced Laboratory Practice. Electricity and Magnetism. *Second semester; Saturday* 9 *to* 1. Professor TROWBRIDGE and Mr. TERRY.

Courses 3a and 3b are designed to accompany courses 2a and 2b.

4. Analytical Mechanics. This course will treat of those portions of mechanics which are of particular value in physics. A brief treatment of analytical geometry and the calculus will be given as an introduction. This course is recommended to those who expect to do further work in physics. *Throughout the year; Tu., Th., at* 11. Associate Professor MENDENHALL.

5. Hertzian Waves and Wireless Telegraphy. A non-mathematical course of experimental lectures. The fundamental experiments of Hertz will be demonstrated, the subjects of resonance and directing will be treated, and the present problems in space telegraphy will be discussed. *First semester; F., at* 4. (Omitted in 1905-06). Professor TROWBRIDGE.

6. Radio-activity. A course of experimental lectures open to those who have completed course 1 or 101, or their equivalents. *First semester; F., at* 4. Professor TROWBRIDGE.

7. High Temperature Measurement. Recent developments in theory and practice will be considered, accompanied by laboratory practice with the various methods. *Second semester; one lecture and one laboratory period a week.* Associate Professor MENDENHALL.

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8a. Mathematical Physics. Theory of Electricity and Magnetism. *First semester; Tu., Th., F., at* 10. Professor TROWBRIDGE.

8b. Mathematical Physics. Special topics in physical optics: Theory of the grating, spectroscopy, and dispersion. *Second semester; M., W., F., at* 9. Associate Professor MENDENHALL.

Courses 8a and 8b are extensions of courses 2a and 2b and are open to those who have taken these courses or their equivalents, and also a course in the differential and integral calculus.

9. Thesis. At the beginning of the first semester, the student is expected, with the advice of the instructors, to take up some special line of investigation, to be conducted under the direction of those in charge of the department. *Full study throughout the year.* Professor TROWBRIDGE and Associate Professor MENDENHALL.

10. Colloquium. This is an informal meeting of the advanced students and members of the department of Physics, for the critical reading and discussion of the current periodical literature. *Throughout the year; F., at* 5. Professor TROWBRIDGE and Associate Professor MENDENHALL.

Primarily for Graduates.

16. Electricity and Magnetism. The requirements for this course, and also for the following courses, are a good working knowledge of the calculus and the completion of the undergraduate courses 2, 3, and 8, or their equivalents. Alternates with course 17. *Throughout the year; three times a week, at* 12. Professor TROWBRIDGE.

The treatment of this course is based on that given in Drude's *Physik des Aethers*, special attention being given to the subjects of electro-magnetism and the theory of electro-magnetic waves.

17. The Electro-Magnetic Theory of Light. *Throughout the year; twice a week, at* 12. (Omitted in 1905-06.) Professor TROWBRIDGE.

It is the aim in this course, which is a continuation of course 16, to give a rigid mathematical treatment of light from the electro-magnetic point of view.

18. Thermodynamics. The treatment in this course will be sub-

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stantially the same as that given in Buckingham's *Thermodynamics*, with additional applications to problems of radiation. *Throughout the year; M., W., F., at* 10. Associate Professor MENDENHALL.

19. Graduate Research. This course is designed for those who have completed the equivalent of the laboratory practice represented by the undergraduate courses, and who now desire to devote some time to investigation in special lines. This work will be encouraged by reserving in the laboratory rooms which are devoted exclusively to research work, and by securing whatever special apparatus may be necessary to the successful carrying out of original investigation. Professor SNOW, Professor TROWBRIDGE, and Associate Professor MENDENHALL.

Engineering Courses.

101. General Lectures and Introductory Laboratory Practice. This course is similar in many respects to course 1, but is more technical in its nature, and is particularly designed to meet the needs of the engineering students, of whom it is required. Lectures in two sections, *M., Th., at* 4 *and* 5. Mr. TAYLOR. Two recitations a week by the class in smaller sections. Mr. TAYLOR, Mr. COLTON, Mr. TERRY, and Mr. INGERSOLL. Laboratory practice, *twice a week throughout the year.* Mr. MILLER, Mr. ANGELL, Mr. ANDERSON, Mr. BISHOP, Mr. WORTHING and Mr. WETZEL.

104. Precision of Electrical Measurements. A laboratory course in the exact determination of electrical quantities. Required of juniors in electrical engineering, and elective for students in the other engineering courses. *First semester; twice a week.* Mr. TAYLOR and Mr. TERRY.

105. Advanced Electrical Measurements. A laboratory course in the more difficult electrical measurements, such as the comparison of self-induction, mutual induction, capacity, etc. Elective for those who have completed course 3 or 104. *Second semester; Tu., F.,* 2 *to* 4. Mr. TAYLOR and Mr. TERRY.

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ASTRONOMY.

PROFESSOR COMSTOCK AND ASTRONOMER FLINT.

For Undergraduates.

1. General Astronomy. A rapid survey of the fundamental concepts of astronomy. Given as a lecture course supplemented by quizzes and examination upon an assigned text. *Throughout the year; Tu., Th., at* 12. Professor COMSTOCK.
2. Exercises in General Astronomy. Designed as a supplement to course 1 and open only to students who have completed, or are pursuing that course. A direct study of the sky through simple observations made independently by the student, but discussed in the class room. *Throughout the year; Th., at* 7:30 P. M., at the Washburn Observatory. Astronomer FLINT.

For Undergraduates and Graduates.

13. Spherical Astronomy. Apparent motion of the celestial sphere. Astronomical coordinates and their transformation. Parallax. Refraction. Time. Use of the Ephemeris. *First semester; M., W., at* 12. Professor COMSTOCK.
14. Practical Astronomy. Theory and use of the sextant, theodolite, transit, and equatoreal. *Second semester; M., Tu., W., Th.,* 2 *to* 4. Professor COMSTOCK.
16. Orbital Motion. The differential equations of undisturbed motion and their integrals. Computation of ephemerides. Orbits of double stars and comets. *Throughout the year; conference M., at* 11, *with assigned reading and computation. The equivalent of four hours of laboratory work a week.* Professor COMSTOCK.

For Graduates.

20. Perturbations. The general equations of disturbed motion. Special perturbations. Mechanical quadratures, with numerical applications. A continuation of course 16, and open only to students who have completed that course or its equivalent. (Omitted in 1905-06.) Professor COMSTOCK.
22. The Method of Least Squares. The theory with application to numerical computations. *Throughout the year; confer-*

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ence F., at 11, *with four hours of laboratory work a week.* Professor COMSTOCK.

25. Research Courses. Graduate students and others desiring to pursue advanced astronomical studies will be received in the Washburn Observatory as assistants, and will take part in the regular series of observations with the equatorial telescopes or with the meridian instruments, at the same time continuing their theoretical studies. Facilities for independent original work will be afforded to such students, and their work, if of sufficient value, will be printed in the *Publications of the Washburn Observatory.* Eleven volumes of these *Publications* have already been issued.

For other courses of instruction consult the title Astronomy, in the announcement of the College of Engineering.

GEOLOGY AND MINERALOGY.

PROFESSOR HOBBS, PROFESSOR LEITH, AND PROFESSOR FENNEMANN, MR. HOTCHKISS, AND MR. SMITH.

For students who wish to take a general educational course in geology, no definite prerequisites are specified. It is, however, desirable that physics and chemistry be taken first. Students who have not had these sciences in college are advised to begin geology with course 4 (Physical Geography). If this be inconvenient, the professor in charge of General Geology should be consulted. All who have had physical geography in the University are allowed to take General Geology without other prerequisites. Physics and chemistry are required of all who make geology a major study. It is advised that they be taken before General Geology, but it is allowable to take at least one of them during the same year. Mineralogy also should be taken as early as possible.

Courses 8 to 22 are advanced courses, adapted for graduate students, or for students who have had at least one full year of geology and mineralogy. The courses selected for the year depend upon the needs of the advanced students. In 1905-06, courses 8, 10, 11, 12, 17, 19, 21, and 22 will be among those offered.

President Van Hise, while offering no courses, will continue

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to initiate and direct the research work of advanced students. He will also lecture from time to time on subjects related to the work of the department.

Primarily for Undergraduates.

1. General Geology. This course aims to give, (1), a clear understanding of the forces which are now modifying the earth's crust and which have brought it to its present condition, and (2), enough of structural, physiographic and historical geology, and of minerals, rocks and fossils, to show the student the nature of the field covered by geological study. Excursions are made to points in the vicinity where geologic forces and forms are well illustrated. *Five-fifths, first semester, at* 12. Professor FENNEMAN.
2. Historical Geology. A continuation of course 1. Chiefly the history and stratigraphy of the North American continent. Lectures and text-book study; laboratory exercises with maps and sections, and with typical sets of fossils. *Five-fifths, first half of second semester, at* 12. Professor FENNEMAN.
3. Field Geology. The study and mapping of selected areas adjacent to Madison. Students work in parties, generally of two or three. The course includes a three-day trip to the Baraboo ranges and the Dells of the Wisconsin river. Courses 1 and 2 are prerequisites. *Five-fifths, last half of second semester; F.,* 2 *to* 6. *Sat.,* 9 *to* 1 *and* 2 *to* 6. Professor FENNEMAN.
4. Physical Geography. This course covers in a more technical way the customary field of physical geography, assuming, however, that the student is familiar with the subject as studied in high schools. Assigned readings are supplemented by lectures, laboratory work, and excursions. *First semester; M., W., F., at* 10. Professor FENNEMAN and Mr. HOTCHKISS.
5. Physiography of the United States. This course presupposes a knowledge of physical geography. The United States is divided into regions on the basis of topography and geological history. Each region is studied separately. The several topographies, soils, climates, mineral and other resources are treated in their physical relations and as conditions affecting habitation. *Second semester; M., W., F., at* 10. Professor FENNEMAN and Mr. HOTCHKISS.

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6. General Course in Mineralogy. Prerequisite, a general course in chemistry. Trigonometry should be taken if possible. The course is concluded by a brief treatment of the characteristics of rocks and their geological field classification. *Throughout the year; M., Tu., W., Th., F., at* 11. Professor HOBBS.

7. Short Course in Mineralogy. Determinative mineralogy and blow-pipe analysis. This course is required of civil engineers and is elected by long course students in geology and mineralogy. It is given in two divisions: Division A, *M., Th.,* 2 *to* 4; Division B, *Tu., F.,* 2 *to* 4. *Two-fifths credit.* Professor HOBBS and Mr. HOTCHKISS.

For Undergraduates and Graduates.

8. Optical Mineralogy. Lectures, quizzes, and laboratory work with the polarizing microscope. A prerequisite to petrology. *First semester; M., W., F.,* 9 *to* 11. Professor HOBBS and Mr. HOTCHKISS.

10. Microscopic Petrology. The study of rocks as mineral aggregates with the aid of the petrographical microscope. Course 8 is a prerequisite to this course. *Second semester; M., W., F.,* 9 *to* 11. Professor HOBBS.

11. Economic Geology (Metallic). Emphasis is placed on the occurrence, origin, and development of metallic minerals, involving a summary of the principles of metamorphism and ore deposits given in course 15. Excursions may be taken to the iron, copper, lead, and zinc districts accessible from Madison. Chemistry 1, Mineralogy 6, and Geology 1, 2, and 3, are prerequisites for this course. *First semester and first half of second semester; M., W., F., at* 4. Professor LEITH.

12. Economic Geology (Non-metallic). This course includes a study of water, building materials (of mineral origin), soils, coal, petroleum, natural gas, and minor non-metallic mineral products. These subjects are considered with reference to origin, geological relations, areal distribution (chiefly in the United States) and exploitation. Illustrations of most of the subjects are found within the field accessible to the class. Prerequisites the same as for course 10. *Second half of second semester, to follow course* 10; *M., W., F., at* 4. Professor LEITH.

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13. Introductory Paleontology. A study of the fossil forms of those invertebrates which are most important in geological history. A knowledge of General Geology is assumed in this course. *Second semester; M., Tu., W., Th., F., at* 12. Mr. BLACKWELDER.

Primarily for Graduates.

14. Principles of Structural Geology. The behavior of rocks under fracture and flowage, requiring the discussion of joints, faults, folds, and cleavage, from field, experimental and mathematical standpoints. For this course there is accessible an unequalled collection of specimens and slides illustrating structural features belonging to the pre-Cambrian and Metamorphic Division of the U. S. Geological Survey. *Lectures and laboratory work. Throughout the year; Tu., Th., S., at* 3. Professor LEITH.
15. Metamorphism. Principles and their application to the deposition of ores. The course is based largely on an exhaustive monograph on this subject by President Van Hise. *Lectures and laboratory work. Throughout the year; M., W., F., at* 4. Professor LEITH.
16. Metamorphic Rocks. A laboratory course. With special reference to description and classification under the principles of metamorphism of course 15. *Throughout the year; Tu., W.,* 2 *to* 4. Professor LEITH and Mr. HOTCHKISS.
17. Principles of Pre-Cambrian Geology. This course treats of the pre-Cambrian stratigraphy of North America and with the problems of correlation, structure, and metamorphism to be met in the study of the ancient crystalline rocks. U. S. Geological Survey specimens and slides from all the principal areas of pre-Cambrian rocks of North America are available for study. *Throughout the year; Tu., Th., S., at* 4. Professor LEITH.
18. Lake Superior Geology. A course offered because of the scientific and commercial importance of the Lake Superior region, and the intimate relations of this department to its development. The U. S. Gelogical Survey Monographs on the Lake Superior region are used as texts and the original specimens, slides, and charts described in the monographs are at the disposal of the students. At the close of the course in the spring, an excursion is made to points of

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geologic and economic interest in the Lake Superior country. *Throughout the year; M., W., F., at* 4. Professor LEITH.

19. Advanced Petrology. Prerequisite to this course are courses 8 and 10. Emphasis is laid upon the quantitative classification of igneous rocks, and the methods of investigation necessary to determine the place of a given rock in the system. *Three-fifths or full credit as arranged.* Professor HOBBS.

20. Advanced Crystallography. Mineralogy 6 is a prerequisite. *Three-fifths or full credit as arranged.* Professor HOBBS.

21. Areal Physiography. The study of assigned areas, their physiographic histories, boundary lines, classification and subdivision. Work is at present being done in this course without regularly appointed lectures hours, and the amount of credit for each student is determined at the close of the semester. Professor FENNEMAN.

22. Research Work. Offered by the members of the department in continuation of their respective courses. President Van Hise will assist in the direction of this work. The amount of time that can be allotted is subject to special arrangement.

23. Geological Seminary. Subjects under investigation by the members and students of the department, and reviews of important publications are discussed. *F., at* 5.

METEOROLOGY.

MR. BARTLETT OF THE U. S. WEATHER BUREAU.

For Undergraduates and Graduates.

1. Elementary Meteorology. The properties and phenomena of the earth's atmosphere, including barometric pressure, temperature, precipitation, fog, dew, frost, clouds, the general circulation of the atmosphere, and general and local storms. Explanation of the meteorological apparatus in use at the Weather Bureau office, and instruction in its use. Instruction and practice work in taking and recording weather observations, in preparing weather maps, and in the use of

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the weather maps in making forecasts and warnings. *First semester; three times a week.*

2. Advanced Meteorology and Climatology. The climatic elements. Solar or mathematical climate. Physical climate, including continental, marine and mountain climates. Snow-line and glaciers, mountain and valley winds, foehn, sirocco, bora, and mistral. Mountains as climatic barriers. Geological and secular changes of climate. Periodic variations of climate. Especial attention will be given to the study of the climate of the United States. *Second semester; three times a week.*

Designed for students who have taken the elementary course.

BIOLOGY.

PROFESSOR BIRGE, PROFESSOR RUSSELL, PROFESSOR HARPER, PROFESSOR BARDEEN, ASSOCIATE PROFESSOR MILLER, ASSISTANT PROFESSOR MARSHALL, ASSISTANT PROFESSOR FROST, ASSISTANT PROFESSOR C. E. ALLEN, DR. DENNISTON, DR. SCHMITTER, DR. B. M. ALLEN, DR. OLIVE, DR. OVERTON, MR. WAGNER, MR. MARQUETTE, MISS SHERMAN, MR. HASTINGS, MR. REED, MR. VORHIES, AND MISS SANDS.

Primarily for Undergraduates.

1. General Biology. Introductory to botany, zoology, and anatomy, and required as preliminary to all advanced work in these departments. *Two recitations or lectures and four laboratory periods a week.*

Lectures, *M.*, *W.*, *at* 3. Professor HARPER and Professor BIRGE. For laboratory work the class is divided into two or three sections, each meeting for two hours daily. Assistant Professor MARSHALL, Dr. OLIVE, Mr. WAGNER, Miss SHERMAN, Mr. REED, and Mr. VORHIES. Quiz divisions are also required to meet once a week.

The first semester is devoted to a study of the general principles of biology as illustrated by plants. The second semester is given to zoology. Students can enter the course in either semester.

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ZOOLOGY.

PROFESSOR BIRGE, ASSISTANT PROFESSOR MARSHALL, MR. WAGNER, AND MR. VORHIES.

Primarily for Undergraduates.

2. Invertebrate Zoology. A general course in the morphology and classification of invertebrates. *Throughout the year, 2 to 4.* Assistant Professor MARSHALL.

3. Human Physiology. A. Nutrition, respiration, excretion. *First semester; M., W., F., at 8. B.* Motion, nervous system, and sense organs. *Second semester; Tu., Th., at 8.* Textbook, Martin's *The Human Body.* (Omitted in 1904-05.) Professor BIRGE.

For Undergraduates and Graduates.

11. Animal Behavior. A discussion of the reaction of animals to stimuli, with special reference to recent researches. Lectures. *First semester; W., F., at 11.* Mr. WAGNER.

12a. Entomology. Lectures. A general course in the anatomy, embryology, and classification of insects, with special attention to forms of economic importance. *Twice a week; first semester.* Assistant Professor MARSHALL.

12b. Entomology. Laboratory work. *Three-fifths or five-fifths credit. First semester or throughout the year.* Assistant Professor MARSHALL.

13. Invertebrate Embryology. The segmentation of the egg, the formation of the gastrula, and the leading types of metamorphosis in various groups of invertebrates. *Second semester. Three times a week.* Assistant Professor MARSHALL.

14a. Research Work. Invertebrate zoology. Work in entomology and on animal parasites is at present receiving special attention. Credit for work done. Assistant Professor MARSHALL.

14b. Research Work. Animal behavior. The study of the behavior of animals, especially invertebrates, and of their reactions to isolated stimuli.

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BOTANY.

PROFESSOR HARPER, ASSISTANT PROFESSOR ALLEN, DR. DENNISTON, DR. OLIVE, DR. OVERTON, MR. MARQUETTE, MISS SHERMAN, MR. REED, AND MISS SANDS.

For Undergraduates and Graduates.

2. Plant Morphology. Course 1 is a prerequisite to this course. Algæ and fungi. The morphology of types of the principal groups will be studied in the laboratory. The lectures will give an outline of the development of the different series and their classification and will also discuss problems of research in connection with the different groups. *First semester; M., W., F.*, 2 *to* 4; *Tu., Th.*, 2 *to* 3. *Lectures Tu., Th., at* 3. Professor HARPER and Dr. OVERTON.
3. Plant Morphology. Liverworts, mosses, ferns, equisetum, and lycopods. A continuation of course 2. *Two-fifths study during the second semester; M., Tu.*, 2 *to* 4. *Lecture, Tu., at* 3. Professor HARPER and Dr. OVERTON.
4. Plant Morphology. The flowering plants. A study of the life histories of a few types of flowering plants, including the phenomena of pollination, fertilization, development of organs and tissues, and discussions of morphological homologies and allied developmental problems. *Second semester; W., Th., F.*, 2 *to* 4; lecture, *Th., at* 3. Dr. OVERTON.
5. Vegetable Histology. A systematic study of the tissues of phanerogams and ferns. Use of reagents and stains, section cutting, and mounting. Required of all students in pharmacy. *Three-fifths study, first semester.* Dr. DENNISTON and Miss SHERMAN.
6. Physiology of the Flowering Plants. A laboratory course on the special physiology of the vascular plants. *Second semester; five-fifths study.* Professor HARPER and Dr. OVERTON.
7. Cytology. General physiology of organisms. Lectures and experimental work on the reproduction, irritability, and nutrition of the cell. Must be preceded by courses 2, 3, and 4, and an ability to read German is desired. *Daily; hours on consultation.* Professor HARPER and Mr. MARQUETTE.
8. Mycology. Special work on the morphology and classification

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of the fungi is offered to advanced or graduate students. *Hours on consultation.* Professor HARPER or Dr. OLIVE.

9. Plant Pathology. A laboratory course on the diseases of plants. Especial attention is given to the methods of infection, effect on the host plant, etc., of the fungi which cause diseases of garden crops, cereal grains, etc. *Hours on consultation.* Professor HARPER.

10. Diseases of Timber Trees. A special course of lectures and laboratory work on the diseases of economically important forest trees, and the causes of decay in timber used for building and other purposes. The lectures may be taken without the laboratory work. *Two-fifths study, second semester. Hours on consultation.* (Omitted in 1904-05.) Dr. ALLEN.

11. Bryology. Special work on the morphology and classification of the bryophyta is offered to advanced or graduate students. This course must be preceded by courses 1, 2, 3. 4, or their equivalent. *Hours on consultation.* (Omitted in 1904-05.) Dr. ALLEN.

12. Native Trees. A study of the structure and characteristics of forest trees. Lectures, laboratory, and field work. Open to those who have had the equivalent of one semester's work in general botany. *Two-fifths study; second semester.* Dr. DENNISTON.

13. Botanical Methods. Practice will be given in methods of preparing plant material and of growing various algæ and fungi for use in the class room. Opportunity will also be given for collecting and preserving material for laboratory courses. Open to students who have had courses 1 and 4. *Two-fifths study; second semester.* Professor HARPER and Miss SHERMAN.

14. Hybridization, Parthenogenesis, and special problems in the fertilization of the angiosperms. The course deals with some of the more fundamental principles of plant breeding. *First semester; two-fifths study.* Dr. OVERTON.

15. Physiological Seminary. For the study of special subjects in general physiology, and for the presentation of the results of investigation. Professor HARPER.

16. Research Work. Students whose preparation is adequate may on consultation be assigned special subjects of investigation. *Daily.* Professor HARPER.

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20. Morphology and Classification of the Flowering Plants. An elementary course designed primarily for pharmacy students, but open to others who desire to begin the study of botany. The life histories and ecology of seed plants, with a comparative study of the principal families, and the identification of common species. Field work will be an important feature. Excursions on Saturdays. *M.*, *Tu.*, *W.*, *Th.*, *F.*, 8 *to* 10; *second semester*. Dr. OLIVE and Miss SHERMAN.

21. Microscopical Examination of Drugs and Food Products. The object of this course is to study and illustrate the methods of identifying powdered drugs and food products, and detecting adulterations. *Three-fifths study; second semester*. Dr. DENNISTON and Miss SHERMAN.

22. Pharmacognosy. This course presents to the student the main facts of the natural history of drugs, and the plants producing them. Required of all students in pharmacy. Text book, Culbreth's *Materia Medica*. *Twice a week; second semester of the junior year and the first semester of the senior year*. Dr. DENNISTON.

23. Laboratory Work. For three-year or four-year pharmacy students. The course consists in a study of the microscopic structure and characteristics of further types of drugs. Required of all seniors. *Three-fifths study during the first semester of the senior year*. Dr. DENNISTON.

24. For Pre-Medical Students. An abridgement of the work given to pharmacy students is offered for those intending to study medicine. As far as may be, the methods used are those detailed for the foregoing courses. No drug collection is required and no microscopic study is expected. Two lectures and two hours' laboratory work per week. *Three-fifths during the first semester*. Dr. DENNISTON.

25. The Collection and Commerce of Crude Drugs. Laboratory and field work supplemented by lectures and recitations. *One-fifth during the first semester of the junior year*. Dr. DENNISTON.

26. Research Work. Anatomy or the taxonomy of seed-plants and ferns. Special subjects for original investigation will be assigned to advanced or thesis students. Dr. DENNISTON.

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ANATOMY.

PROFESSOR BARDEEN, ASSOCIATE PROFESSOR MILLER, DR. SCHMITTER, AND DR. ALLEN.

A group of courses intended to offer a comprehensive view of the gross and microscopic anatomy and the embryology of vertebrates with special reference to man, is given in this department. In addition, opportunities are afforded for advanced work and research in anatomy. The work of the department is carried out in close conjunction with that of the department of Zoology, in which special attention is paid to the anatomy of invertebrates, and that of the department of Botany, in which the anatomy of plants is studied. A broad view of anatomical problems will thus be maintained.

Laboratory Facilities.

There are laboratories devoted to human anatomy, vertebrate anatomy, histology, and embryology. The histological laboratory is provided with a full equipment of microscopes, microtomes, and the various stains and reagents. For illustrating the lectures in histology there are a large number of models, wall charts, and an extensive set of lantern slides to which additions are being constantly made. For the work in embryology a similar equipment is provided. For the study of human anatomy a supply of well preserved material is maintained. A large number of models by Steger of Leipzig, Tramond of Paris, Zeigler of Freiburg, Auzoux of Paris, and other well-known firms are provided to assist the student in his work. Each student has the use, under proper restrictions, of these models and of skeletons, articulated and disarticulated skulls, ligament preparations, etc.

For those prepared to carry on advanced research special laboratory facilities are provided.

A Journal Club meets once a week for the discussion of important contributions to anatomical science.

For Undergraduates and Graduates.

5. Comparative Anatomy of Vertebrates. A series of seven animals are dissected for the study of vertebrate structure, and numerous demonstrations are given of the structure of related forms. Only those who have had a training equivalent to that given in Biology 1 are admitted to this course.

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Throughout the year; M., Tu., W., Th., F., 2 to 4. The work of either or both semesters may be taken. Dr. ALLEN.

10. Histology and Organology. The study of the tissues, histology, is first taken up, and this is followed by the study of the minute structure of the chief mammalian organs in the following order: the blood and blood-forming organs, the organs of circulation, digestion, and respiration, the genito-urinary organs, the skin and its appendages. Open only to those who have taken or are taking course 5 or its equivalent. *First semester; M., Tu., W., Th., F., 9 to 11.* Associate Professor MILLER.

15. Vertebrate Embryology. The development of the frog, chick, and pig will be studied by means of dissection and the use of microscopic preparations. Human embryology will be studied from models. Open only to those who have taken course 10 or its equivalent. *Second semester; M., Tu., W., Th., F., 9 to 11.* Professor BARDEEN.

17. Problems of Vertebrate Embryology. This course involves a study of: (a) The development, structure, and physiological relations of the sex-cells; (b) Early stages in the development of the embryo under normal and experimental conditions. Current theories of inheritance and regeneration will be discussed. *Second semester; M., W., F., 11 to 1.* Dr. ALLEN.

21. Human Anatomy. In this course a thorough training is offered in the dissection of the human body, and in descriptive human anatomy. The course is open only to those who have had course 5 or its equivalent. *October 1 until April 15; M., T., W., Th., F., 2 to 5.* Professor BARDEEN and Dr. SCHMITTER.

23. Special Human Anatomy. Those qualified to do independent work may make arrangements for the study of human anatomy at other periods than those covered by course 21.

26. Neurology. This course consists of dissections of the sheep's brain and the human brain, and a study of the microscopic anatomy of the central nervous system and sense organs. Open only to those who have taken courses 5, 10, and 15 or their equivalents. *April 15 to the end of the year; M., Tu., W., Th., F., 2 to 5.* Associate Professor MILLER.

30. Advanced Work in Anatomy. Opportunity for advanced

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study in the field of human and comparative anatomy, gross and microscopic, in embryology and experimental morphology, and in laboratory technique is offered to properly qualified students. This work will be done under the direction of the various members of the staff.

Primarily for Graduates.

35. Investigation under Direction. To qualified students the department is prepared to offer problems for investigation and training in methods of research. Special arrangements for this work may be made with the individual members of the staff.

40. Independent Investigation. The department will welcome independent investigators who wish to make use of its facilities for conducting research in anatomy.

BACTERIOLOGY AND HYGIENE.

PROFESSOR RUSSELL, ASSISTANT PROFESSOR FROST, AND MR. HASTINGS.

For students desiring a general laboratory course in Bacteriology course 1 should be taken. Chemistry and General Biology should precede this work. On the basis of this general course, the student is then able to take up special work in Medical (course 2), Sanitary (course 8), Dairy (course 16), Agricultural (course 17), Home Economics Bacteriology (course 9). Course 1 followed by courses 2, 9, 16, or 17, are prerequisites for major work in bacteriology.

Primarily for Undergraduates.

1. General Bacteriology. A general survey of the entire field of bacteriology from the biological point of view. The course is a prerequisite to specialization in applied lines, as Medical, Sanitary, or Agricultural Bacteriology. Required of junior students of the College of Agriculture. Lectures, *M., W., F., at* 11; Laboratory work, 11 *to* 1 *and* 2 *to* 4. *First semester.* Professor RUSSELL and Assistant Professor FROST.

2. Medical Bacteriology. This course, which is especially designed for pre-medical students, considers the bacteria that are especially concerned in the production of disease pro-

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cesses. Course 1 is a prerequiste. Lectures, *M., W., F., at* 11, and laboratory work. *Second semester.* Assistant Professor FROST.

6. Communicable Diseases: Their Cause and Prevention. Weekly lectures of a non-technical character. No previous work in science is required. *Second semester. One-fifth credit.* Alternates with course 7. (Omitted in 1905-06.) Assistant Professor FROST.

7. General Hygiene. A course of lectures dealing with the hygienic aspects of air, water, and food supplies, and the disposal of sewage. *Second semester; one-fifth study.* Assistant Professor FROST.

8. Biology of Water Supplies. Lectures and laboratory work. *First semester. Fife-fifths credit.* Required of juniors in sanitary engineering. Assistant Professor FROST.

9. Bacteriology for Students in Home Economics. Lectures, recitations, and laboratory work. The bacteria will be studied in their relation to the home and its environments. The course includes work on the various fermentations, and on the sanitary aspects of the subject. Course 1 is a prerequisite. *Three-fifths credit. Second semester.* Assistant Professor FROST.

10. Demonstration Course in Bacteriology for Teachers. This will consist in the performance of simple exercises to illustrate the methods of growing, examining, and studying the bacteria, and their distribution in various substances, as air, soil, and water. Intended especially for students preparing to teach science who wish to introduce a brief consideration of bacteria into the subjects of botany or physiology in the high schools. This must be preceded or accompanied by courses 6 or 7. *Two hours a week; second semester. One-fifth credit.* Assistant Professor FROST.

16. Dairy Bacteriology. Study of bacteria in relation to dairy processes, including the production of milk, butter, and cheese; also action of disease bacteria in milk. Given in the College of Agriculture. Lectures, assigned literature, and laboratory work. *Second semester. Five-fifths credit.* Professor RUSSELL and Mr. HASTINGS.

17. Agricultural Bacteriology. Embraces a consideration of bacteria as applied to agricultural processes, including their relation to soils, bacterial diseases of plants and animal

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life, and dairying. Given in the College of Agriculture. Lectures and laboratory work. *Second semester. Five-fifths credit.* Professor RUSSELL and Mr. HASTINGS.

3. Thesis Work in Bacteriology. Students who desire to select their theses in this department must take course 1 in their junior year or before, and if the subject is selected in any other than general biological lines, the special work in medical, sanitary, or agricultural bacteriology, respectively, should be taken in the second semester of the junior year. The subject should be selected before the close of the junior year. Professor RUSSELL and Assistant Professor FROST.

For Undergraduates and Graduates.

4. Topical Work in Bacteriology. Students who have had sufficient preliminary work (course 1 and course 2, 9, 16, or 17 or their equivalent) will be assigned special topics for study. Laboratory work and conferences. Professor RUSSELL and Assistant Professor FROST.

11. Immunity. Includes a study of the phenomena and theories of immunity in general as well as of the various infectious diseases. Lectures or reports. Open only to advanced students. *First semester. One-fifth credit.* Assistant Professor FROST.

12. Pathogenic Protozoa. This includes a study of the most important of the protozoa known to cause human and animal diseases. Open only to advanced students. Lectures and demonstrations. *Second semester. One-fifth credit.* Assistant Professor FROST.

Primarily for Graduates.

5. Research Work in Bacteriology. Opportunity is offered for work in original investigation, which may be arranged for on consultation. A reading knowledge of French and German is necessary. Professor RUSSELL, Assistant Professor FROST, and Mr. HASTINGS.

18. Bacteriology of Special Dairy Problems. Exceptional opportunities are offered for a combination of laboratory work with the practical problems relating to the production of milk and its manufacture in the dairy. Laboratory work, assigned literature, and conferences. *Throughout the year.*

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Given in the College of Agriculture. Professor RUSSELL and Mr. HASTINGS.

19. Bacteriology of Animal Diseases. Special problems on bacterial diseases of animals. Laboratory work, assigned literature, and conferences. *Throughout the year.* Given in the College of Agriculture. Professor RUSSELL and Mr. HASTINGS.

PHARMACY.

ASSISTANT PROFESSOR FISCHER AND MR. DU MEZ.

Primarily for Undergraduates.

1. Laboratory Technique. The principles and practice of pharmaceutical operations, such as comminution, expression, decantation, filtration, maceration, percolation, diffusion, dialysis, crystallization, and precipitation. *Lectures and recitations, W., F., at* 11; *one laboratory period.* Mr. BRANDEL.
2. Pharmaceutical Technology. The study and manufacture of galenical and other preparations: waters, tinctures, fluid extracts, spirits, oleo-resins, etc.; also of pills, suppositories, ointments, plasters, etc. *First semester; lectures and recitations, Tu., Th., at* 11; *three laboratory periods.* Assistant Professor FISCHER and Mr. DU MEZ.
3. Prescription Practice. The study of the prescription; practice in the compounding of physicians' prescriptions; also the study of physical, chemical, and therapeutical incompatibilities. *Second semester; lectures and recitations, Tu., Th., at* 11; *two laboratory periods.* Assistant Professor FISCHER and Mr. DU MEZ.

10. The Economic Function of the State. This course consists of a series of weekly lectures, historical and critical, on the state in its relation to industry, trade, and the professions, with special reference to pharmacy. *First semester,* 1904-05. Professor MEYER.
11. Law Applied to Pharmacy. A course of lectures treating of the validity and construction of laws especially restraining the practice of pharmacy; of the liability of pharmacists, both criminal and civil; for their own violation of laws and that of their agents; also for their own negligence and that of their agents.

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12. State Boards of Pharmacy. The development of state boards of pharmacy in the United States and their legal functions, with special reference to their duties as examining bodies.

HOME ECONOMICS.

PROFESSOR HUNT AND MISS HUNTINGTON.

Primarily for Undergraduates.

1. House Sanitation. The site, surroundings, and construction of a dwelling house considered with reference to health. *First semester; three-fifths study.* Professor HUNT.
2. House Decoration. The decorations and furnishings of a house considered with reference to beauty. *Second semester; one-fifth study.* Professor HUNT.
3. The Selection and Preparation of Foods. This course presents the economic aspect of the food problem. Lectures and laboratory work. *First semester; five-fifths study.* General chemistry is a prerequisite. Professor HUNT and Miss HUNTINGTON.
4. The Teaching of Domestic Science. Lectures on the place of home economics in the lower schools. Laboratory practice in arranging courses for such schools. Course 3 is a prerequisite. *Second semester; three-fifths study.* Professor HUNT.
5. Household Economy. The details of house management. *Second semester; two-fifths study.* Miss HUNTINGTON.
6. Dietetics. The physiological aspect of the food problem. Lectures and laboratory work. Course 3 and physiology are prerequisites. *First semester; three-fifths study.* Professor HUNT.
7. Home Economics. The home in its relation to society. *Second semester; two-fifths study.* Courses 1, 2, 3, and 5 in this department, and Economics 1, are prerequisites. Professor HUNT.
8. Microscopical Examination of Food Products and Fibers. The histology of plant products used as foods, beverages, and condiments, with special reference to the detection of adulterants. A study of the structure and nature of the common textile fibers is also included. *Second semester; two-fifths study.* Dr. DENNISTON and Miss SHERMAN.

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9. Bacteriology for Students in Home Economics. (See p. 185.)
10. Food Analysis. Open to those who have had General Chemistry and one semester of analytical chemistry. *Second semester; three-fifths study.*

MUSIC.

PROFESSOR PARKER AND MR. BREDIN.

The courses in music, except course 1, are open as electives to students in any department of the University who show sufficient musical ability to pursue them with profit, and receive the same credit as similar courses in other departments of the University.

Course 1 is open to election in the freshman year by candidates for the degree of Bachelor of Arts, in addition to a minimum of fourteen hours, but does not count as a part of the required 120 hours.

For admission to course 1, no previous knowledge of music is required. Those desiring to take course 2 must be able to read and play simple four-part music. Course 1 will be found useful in strengthening preparation for the courses in harmony and counterpoint. Courses 1 and 2, or their equivalent, are required as a preparation for course 6. Students may take the lectures of the second semester of course 7 without having taken those of the first semester.

Special courses in the study of Methods of Teaching Music in the public schools, given by Mr. Herman E. Owen, are this year offered for the first time. See announcement under School of Music, p. 315.

Students may be admitted to advanced courses on examination.

Special students may substitute private lessons in piano playing or singing for one or more studies on recommendation of the Professor of Music, but without credit toward graduation, except as specified under course 8. See the statement of the School of Music on p. 310.

Classes meet in the music lecture room, Assembly Hall.

Students who desire to become connected with the University Military Band should confer with the leader.

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Primarily for Undergraduates.

1. Musical Theory and Choral Practice. *Throughout the year; M., W., at* 5. Mr. BREDIN.
2. Elementary Harmony. *Throughout the year; Tu., Th., at* 4. Professor PARKER.
3. Advanced Harmony. *First semester; M., W., F., at* 11, *subject to change.* Professor PARKER.
4. Counterpoint. *Second semester; M., W., F., at* 11. Professor PARKER.
5. Double Counterpoint and Fugue. *Throughout the year; M., W., F., at* 10, *subject to change.* Professor PARKER.
6. Musical Composition. *Twice a week throughout the year; Tu., Th., at* 11, *subject to change.* Professor PARKER.
7. History of Music. Lectures. *Throughout the year; Tu., Th., at* 3. Professor PARKER.
8. Advanced Piano Playing, Singing, Organ, or Violin. Senior and junior years only. Hours and credit to be arranged with the instructor and Director of the School of Music, but not to exceed a total of ten semester hours.

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THE COURSE IN COMMERCE.

STAFF OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
JOHN B. PARKINSON, A. M., Vice President. Professor of Constitutional and International Law.
W. A. SCOTT, Ph. D., Director, and Professor of Political Economy.

T. S. ADAMS, Ph. D., Assistant Professor of Political Economy.
D. EARLE BURCHELL, A. B., Assistant Professor of Business Administration.
V. COFFIN, Ph. D., Assistant Professor of European History.
L. W. DOWLING, Ph. D., Assistant Professor of Mathematics.
N. M. FENNEMAN, Ph. D., Professor of Geology.
C. R. FISH, Ph., D., Assistant Professor of American History.
W. F. GIESE, A. M., Associate Professor of Romance Languages.
V. LENHER, Ph. D., Associate Professor of Chemistry.
B. H. MEYER, Ph. D., Professor of Political Economy.
P. S. REINSCH, Ph. D., Professor of Political Science.
S. E. SPARLING, Ph. D., Assistant Professor of Political Science.
B. W. SNOW, Ph. D., Professor of Physics.
SUSAN A. STERLING, M. L., Assistant Professor of German.
PHILIP ADAMS, B. A., Instructor in English.
FLORENCE E. ALLEN, M. L., Instructor in Mathematics.
E. A. COOK, B. L., Instructor in English.
HUGO C. HORACK, Ph. B., LL. B., Instructor in Law.
M. L. LORENZ, A. B., Instructor in Political Economy.
OTTO PATZER, B. L., Instructor in French.
E. C. L. C. ROEDDER, Ph. D., Instructor in German.
GEORGE C. SELLERY, Ph. D., Instructor in European History.
A. R. SEYMOUR, M. L., Instructor in French.
H. C. TAYLOR, Ph. D., Instructor in Political Economy.
H. C. HOCKETT, B. L., Assistant in History.
ELSBETH VEERHUSEN, Ph. D., Assistant in German.
B. M. RASTALL, M. A., Assistant in Mathematics.
STEPHEN W. GILMAN, LL. B., Assistant in Commerce.

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THE PURPOSE OF THE COURSE.

The purpose of this course is to supply facilities for the training of young men who desire to enter business careers, especially in such fields as domestic and foreign commerce and banking, or branches of the public service, like the consular, in which knowledge of business is essential. It has been established in the belief that in order to achieve the largest measure of success at the present time, and in order properly to perform his duties to himself and to society, the business man needs not only a college education, but a course of study adapted to his peculiar needs. Justification for this belief may be found in the magnitude, complexity, and rapidly changing character of modern industrial processes, and in the unfitness of the traditional college course properly to equip a young man for the most efficient work in this field. The modern business man needs training of the highest order, combined with a knowledge of the mathematical, physical, and social sciences, and of their applications to commerce and industry, and a thorough command of his mother tongue and of at least one modern foreign language. Fortunately the development of historical, political, economic, and scientific studies in recent times, and improvement in our educational methods, has made possible the construction of a course of study which combines the necessary elements.

It is not the purpose of this course to graduate young men equipped with all the technical knowledge needed for the performance of the manifold processes of industry and commerce. It is well understood that such knowledge must be acquired by actual experience in connection with business institutions. It is our purpose, however, to give our students such training and such knowledge of the structure and workings of the industrial organism as will enable them to learn the technique of any concern in much less time than would otherwise be required, and to attain a degree of industrial and social efficiency which is impossible for the average man who goes into business without such preliminary training.

REQUIREMENTS FOR ADMISSION.

Students will be admitted to this course on compliance with the conditions imposed for entrance to the College of Letters and Science. (See p. 57.)

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Persons twenty-one years of age, who are not candidates for a degree, and who wish to take special studies, are permitted to enter as adult special students upon giving satisfactory evidence that they are prepared to profit by the courses desired.

Students who have satisfied all the requirements for entrance, but do not wish to be candidates for the degree, will be admitted to any of the studies of this course for which they are properly prepared.

PLAN OF THE COURSE OF STUDY.

I. STUDIES REQUIRED OF ALL.

These occupy nearly the whole of the student's time in the freshman and sophomore years, about one-half of his time in the junior year, and considerably less than one-half of his time in the senior year.

With two exceptions the studies of the first two years are those which have long been considered as fundamental and necessary in a liberal education, namely: natural science, mathematics, English, foreign languages, history, and economics. The peculiarity of the course in these years consists in the selection made from the numerous studies available under these different heads. In natural science, physical geography and the physiography of the United States have been included because they are basal to commercial geography; in mathematics, algebra and its commercial applications have been selected because of their practical utility in various branches of industry and commerce; the course in English is the general training course required of all freshmen in the Unversity; the foreign language courses devote special attention to the acquisition of a speaking and writing command of these languages, though the study of literature is by no means neglected; the course in history is selected both for its value as a training in the use of the historical method, and because it aids in laying a proper foundation for various other courses; elementary economics and commercial geography are basal to a large number of courses in applied economics offered in the junior and senior years.

The required work of the junior and senior years includes continuation courses in the modern languages, Money and Banking, Transportation, Commercial Law, and Business Administration. These are designed to complete the student's survey of the struc-

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ture and workings of the modern industrial organism, to supplement the specialized studies of his elective group, to increase his breadth of vision, and to train him in the investigation and interpretation of the kinds of facts that he must deal with in after life. The course in Business Administration serves the additional purpose of testing the student's ability to perform the various duties for which he is being trained; for example, to carry on correspondence in English and the foreign language he is studying, to make the mathematical calculations required in the various business situations placed before him, to use business forms and papers, rate sheets, etc., to devise systems of accounting, and actually to keep the accounts of the various enterprises suggested; in short, to put to actual use the knowledge and the training derived from the courses he has been pursuing.

II. ELECTIVE GROUPS.

These occupy from three to four hours per week during the junior and senior years, and furnish opportunity for a more thorough study of the various branches of commerce and industry. The following groups are at present available, and others may be arranged on consultation with the Director:

Banking and Finance.

Junior Year: Public Finance, 3; Corporation Finance and Securities, 2.

Senior Year: Financial History of the United States, and Thesis, 5; Seminary and Thesis, 4.

Transportation.

Junior Year: Statistics, 3; Special Problems in Transportation, 3.

Senior Year: Foreign Railways and Thesis, 4; Labor Legislation and Thesis, 4.

Manufacturing Industries.

Junior Year: Statistics, 3; Corporation Finance and Securities, 2.

Senior Year: Manufacturing Industries and Thesis, 4.

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Agricultural Industries.

Junior Year: The Elements of Agricultural Economics, 2; Historical and Comparative Agriculture, 2; Public Finance, 3; Statistics, 3.

Senior Year: Agricultural Industries and Thesis, 4; Seminary and Thesis, 4.

The Consular Service.

Junior Year: Colonial Politics, 2; Contemporary Politics, 2; History of Diplomacy, 4.

Senior Year: International Law and Thesis, 4; Federal Services and Thesis, 4.

III. FREE ELECTIVES.

From twenty-nine to thirty-seven semester hours are available for free electives. These may be chosen from any of the courses in the University which the student is fitted to enter, but it is expected that his choice will be guided by the desire to round out and broaden the course he has pursued.

ARRANGEMENT OF STUDIES.

FRESHMAN YEAR.

Physical Geography and Physiography of the United States, 3; German, French, or Spanish, 4; English, 3; Mathematics, 3; History, 3; Gymnastics and Drill.

SOPHOMORE YEAR.

Commercial Geography, 3; Foreign language (continued), 2, or second language, 4; Chemistry or Physics, 5; Elementary Economics (first semester), Money and Banking or Transportation (second semester), 3; free electives, 2 or 0; Gymnastics, Drill, and Business Administration.

JUNIOR YEAR.

Foreign language (continued), 2, or second language (if not taken in sophomore year), 4; Money and Banking or Transportation (the one not taken the second semester, sophomore year), first semester, 3; elective group, 3; free electives, first semester, 5 or 7, second semester, 8 or 10; Business Administration.

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SENIOR YEAR.

Foreign language (continued), 2; Commercial Law, 3; elective group and thesis, 4; free electives, 6; Business Administration.

DEPARTMENTS OF INSTRUCTION.

Political Economy.

For detailed information regarding these courses see p. 112.

1. The Elements of Economic Science. *Repeated each semester; M., W., F., at* 8, 9, *and* 10. Mr. LORENZ.
3. Elements of Public Finance. *First semester; M., W., F., at* 9. Assistant Professor ADAMS.
5. The Elements of Money and Banking. *First semester; M., W., F., at* 9; *second semester at* 8. Professor SCOTT and assistants.
7. Economic Geography. *Throughout the year; M., W., F., at* 8 *and* 9. Dr. TAYLOR.
8. Business Administration. *Throughout three years; two hours per week.* Assistant Professor BURCHELL.
9. Commercial Law. Open only to juniors and seniors of suitable preparation. *Throughout the year; three times a week.*
18. Senior Seminaries. For thesis students. Professor MEYER, Professor SCOTT, Assistant Professor ADAMS, and Dr. TAYLOR.
25. Labor Legislation. *First semester; M., W., F., at* 10. Assistant Professor ADAMS.
26 The Elements of Agricultural Economics. *First semester; Tu., Th., at* 12. Dr. TAYLOR.
27. Historical and Comparative Agriculture. *Second semester; Tu., Th., at* 12. Dr. TAYLOR.
28. Agricultural Industries. *Second semester; at hours to be arranged.* Dr. TAYLOR.
29. Manufacturing Industries. *Throughout the year; M.,* 7:30 *to* 9:30 P. M. Assistant Professor BURCHELL.
30. Social Statistics. Two lectures and two hours laboratory work a week, for which a credit of three hours is given. *First semester; Tu., Th., at* 12, *and M.,* 2 *to* 4. Assistant Professor ADAMS and Mr. LORENZ.
31. Economic Statistics. *Second semester; Tu., Th., at* 12 *and M,.* 2 *to* 4. Assistant Professor ADAMS and Mr. LORENZ.

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33. Financial History of the United States. *First semester; M., W., F., at* 8. Professor SCOTT.
34. Corporation Finance and Securities. Lectures and assigned reading. *Second semester; Tu., Th., at* 12. Professor MEYER.
35. Transportation and Communication. *Repeated each semester; M., W., F., at* 9. Professor MEYER.
36. Special Problems in Transportation. *Second semester; Tu., Th., at* 9. Professor MEYER.
37. Foreign Systems of Railways. *First semester; Tu., Th., at* 8. Professor MEYER.
38. Insurance. *First semester; Tu., Th., at* 11. Professor MEYER.

Political Science.

18. International Law. *First semester; M., W., F., at* 10. Professor PARKINSON.
20. Contemporary International Politics. *Second semester; M., W., F., at* 10. In connection with this course a series of public lectures on problems of international politics will be given. Professor REINSCH.
21. Colonial Politics. A study of the principal systems of colonial government. *First semester; M., W., F., at* 10. Professor REINSCH.
23. Federal Administration. A study of the organization and functions of the different branches of our federal service. *Second semester; Tu., Th., at* 9. Assistant Professor SPARLING.

History.

For detailed information see p. 106.

4. History of the United States. A general survey, with emphasis on political history. This course, or an equivalent, must precede all other courses in American history.
4a. To the Presidency of Jackson. *First semester; M., W., F., at* 11. Assistant Professor FISH.
4b. From the Presidency of Jackson to the present time. *Second semester; M., W., F., at* 11. Assistant Professor FISH.
5. English History. *Throughout the year; M., W., F., at* 9 *and* 11. Dr. SELLERY and Mr. HOCKETT.
7. History of Europe in the Nineteenth Century, 1815-1900.

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Throughout the year; M., W., F., at 11. Assistant Professor COFFIN.

15. Diplomatic History of the United States. *Throughout the year; Tu., Th., at* 10. Professor TURNER and Assistant Professor FISH.*

English.

For detailed information see p. 152.

1. Freshman English. English prose style. Composition. *Three hours per week throughout the year.* Mr. ADAMS and Mr. COOK.

German.

For detailed information see p. 142.

2C. Modern Prose, narrative and dramatic, and one classical drama. *Throughout the year; M., Tu., W., F., at* 9. Assistant Professor ROEDDER.

3C. Reading, Conversation, and Composition. *Throughout the year; Tu., Th., at* 11. Dr. VEERHUSEN.

4C. A continuation of the work of the preceding year, the texts being chosen chiefly to illustrate German history, political, cultural, and literary. *Tu., Th., at* 9. Assistant Professor STERLING.

5C. The work of this course will be of a strictly practical character, being devoted chiefly to oral and written work on topics connected with the actual demands of a commercial career. *Throughout the year; Tu., Th., at* 11. Assistant Professor ROEDDER.

French.

For detailed information see p. 136.

4. Elementary Course. *Throughout the year; M., Tu., W., F., at* 9. Mr. PATZER.

17. Conversation, Composition, and Reading. *Throughout the year; Tu., Th., at* 11. Mr. PATZER.

18. Conversation, Commercial Correspondence, and Reading. *Twice a week throughout the year.* Mr. PATZER.

19. Conversation, Commercial Correspondence, and Reading. A

*Given in 1904-05 by Assistant Professor Fish.

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continuation of course 18. *Twice a week throughout the year.* Mr. PATZER.

Spanish.

3. Elementary. Giese's *First Spanish Book*, and other easy prose. *Throughout the year; in two sections, M., Tu., W., F., at 9 and 12.* Mr. SEYMOUR.
4. Conversation, Composition, and Reading. In this course special attention is devoted to the vocabulary of everyday life. *Throughout the year; Tu., Th., at 11.* Mr. SEYMOUR.
5. Conversation, Commercial Correspondence, and Reading. In this course special attention is devoted to the vocabulary of commerce. *Throughout the year; M., W., at 12.* Assistant Professor GIESE.
6. Conversation, Commercial Correspondence, and Reading. Continuation of course 5. *Tu., Th., at 10.* Mr. SEYMOUR.

Algebra.

1. Algebra. Quadratic equations, theory of indices, limits, arrangements and groups, and progressions. *First semester; three times a week.* Assistant Professor DOWLING, Miss ALLEN, and Mr. RASTALL.
7. Applied Algebra. Logarithms, theory of probabilities, series, and the application of mathematics to insurance and finance. *Second semester; three times a week.* Assistant Professor DOWLING.

Physics.

1. General Lectures and Introductory Laboratory Practice. *Lectures; M., Tu., W., Th., at 12. One recitation a week at an hour to be arranged. Laboratory practice twice a week.* Professor SNOW.

Chemistry.

7. General Chemistry. *Five hours a week throughout the year.* Assistant Professor LENHER and assistants.

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Geology.

For detailed information see p. 172.

4. Physical Geography. *First semester; M., W., Th., at* 10. Professor FENNEMAN.
5. Physiography of the United States. *Second semester; M., W., Th., at* 10. Professor FENNEMAN.

COMMERCIAL COURSE FOR ENGINEERS.

Beginning with the academic year 1905-06 the College of Engineering offers a five-year course which permits a combination of the studies of the various engineering courses with the essential studies of the Course in Commerce. Students making this combination will take the engineering studies as prescribed on p. 242 of the Catalogue and the studies of the Course in Commerce as follows:

FRESHMAN YEAR.

Physical Geography and Physiography of the United States, 3.

SOPHOMORE YEAR.

Commercial Geography, 3; Elementary Economics (*second semester*), 3.

JUNIOR YEAR.

Money and Banking *(first semester)* and Transportation *(second semester)*, 3; Elective Group, 3.

SENIOR YEAR.

Elective Group, 3; Business Administration, 3.

FIFTH YEAR.

Business Administration, 3; Commercial Law, 3.

At the end of the fifth year the appropriate engineering degree will be conferred. Students who so desire may, during the senior year, write a thesis in connection with their elective group in Commerce, and receive the degree of B. S., General Engineering Course.

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Graduate Students.

Graduates of this or other colleges and universities of good standing will be admitted to this course and arrangements will be made so that they may take its peculiar studies in two years, or in less time, provided they have already pursued some of them in their undergraduate courses.

PREPARATION OF TEACHERS.

Students who wish to prepare themselves to teach commercial subjects in secondary schools will be aided in so arranging their elective work as to attain this end. Special facilities for pedagogical practice will be given such students in connection with the course in Business Administration, and work in addition to that prescribed may be arranged in Commercial Geography and Economic History.

SPECIAL LECTURERS.

A number of special lectures are provided each year for the purpose of acquainting students with present business conditions and opportunities. So far as possible, men representing the chief business enterprises of the United States are secured for this purpose.

REQUIREMENTS FOR GRADUATION.

Students who have successfully completed the above course of study will be admitted to graduation and will receive the degree of Bachelor of Arts.

CHARGES AND FEES.

All fees are required to be paid strictly in advance at the beginning of each semester before cards are issued entitling the student to admission to classes.

Tuition is free for all students from the State of Wisconsin.

After ten days from the beginning of each semester no fees are returned except by special vote of the Regents.

Tuition for non-resident students, per semester	$ 15 00
Incidental fee for all students, per semester	10 00
Gymnasium fee for all men students, per semester	1 00

Communications regarding this Course should be addressed to W. D. Hiestand, Registrar, or to William A. Scott, Director.

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THE COURSE IN PHARMACY.

STAFF OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
E. A. BIRGE, Ph. D., Dean of the College of Letters and Science.
EDWARD KREMERS, Ph. G., Ph. D., Director, and Professor of Pharmaceutical Chemistry.

W. W. DANIELLS, M. S., Sc. D., Professor of Chemistry.
RICHARD FISCHER, Ph. G., Ph. D., Assistant Professor of the Theory and Practice of Pharmacy.
W. D. FROST, Ph. D., Assistant Professor of Bacteriology.
R. A. HARPER, Ph. D., Professor of Botany.
H. W. HILLYER, Ph. D., Assistant Professor of Organic Chemistry.
L. KAHLENBERG, Ph. D., Professor of Physical Chemistry.
V. LENHER, Ph. D., Associate Professor of Chemistry.
B. H. MEYER, Ph. D., Professor of Political Economy.
B. W. SNOW, Ph. D., Professor of Physics.
C. A. VAN VELZER, Ph. D., Professor of Mathematics.
I. W. BRANDEL, Ph. G., M. S., Instructor in Pharmaceutical Chemistry.
R. H. DENNISTON, Ph. G., Ph. D., Instructor in Pharmaceutical Botany, and Curator of the Drug Cabinet.
A. G. DU MEZ, Ph. G., Laboratory Assistant in Pharmacy.
E. B. HUTCHINS, M. S., Assistant in Analytical Chemistry.
H. B. NORTH, Ph. G., Student Assistant in Chemistry.
E. W. OLIVE, Ph. D., Resident Lecturer in Botany.
H. E. PATTEN, Ph. D., Instructor in Chemistry.
F. RABAK, Ph. G., Laboratory Assistant in Pharmaceutical Chemistry.
HELEN SHERMAN, B. S., Laboratory Assistant in Botany.
*M. E. TWEEDEN, Ph. G., Assistant in Pharmacy.

*Resigned February 18, 1905.

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General Statement.

The prime object of the Course in Pharmacy is to furnish a thoroughly scientific foundation for the pursuit of the profession of pharmacy. The elements of the fundamental natural sciences, chemistry, botany, or biology, and physics must first be studied before their application to pharmacy can rationally be considered. This is as true for pharmacy as for any other applied science or art. In pursuing these general studies the pharmacy students have the advantage of close association with students from other courses. This imples that in these studies they must be able to keep abreast with students who are graduates of accredited high schools. The best preparation for college, therefore, which the prospective pharmacy student should seek is not that of the shops, but that of a good high school or academy of like rank. The University does not demand practical experience for admission to the courses in pharmacy, but desires such preparation as will best fit for college or university work.

The general study of these fundamental sciences is followed by more or less specialized courses. General chemistry, inorganic and organic, qualitative and quantitative analysis, are followed by pharmaceutical chemistry, and applied chemical analysis; general botany by vegetable histology and anatomy of drugs; general physics by pharmaceutical technique. These somewhat specialized studies, in turn, not only lay the foundation for the study of the more strictly applied courses in practical pharmacy and pharmacognosy, but also prepare the student for thesis work.

The student who can spend only two years at the University is compelled to take up the more technical studies of his course before he has laid a satisfactory foundation. Such a compromise is outlined under the caption, Courses of Study. The three-year student, as a rule, finds time to pursue other studies besides those outlined above, *e. g.*, German, physiology, or bacteriology, etc. The four-year student has the great advantage of supplementing his high school preparation during the freshman and sophomore years by acquiring a reading knowledge of German and French, and by the study of university mathematics, all of which studies are of the greatest importance when the more advanced work of the natural sciences is taken up during the junior and senior years.

Special attention is called to the four-year course offered to graduates of accredited high schools. The course was created in

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order to accommodate those students who desire to obtain a general scientific education and to include in their course the pharmaceutical studies, and with the hope of stimulating a broader pharmaceutical education. For the more applied courses special laboratories have been equipped.

Like the sister profession, medicine, pharmacy is in need, not only of the general practitioner, but also of the specialist. To meet the demands of such, the University offers graduate courses. Graduates who desire to prepare themselves as chemists for manufacturing establishments, as analytic or sanitary chemists, or as bacteriologists, will find that the graduate work in the Course in Pharmacy, as well as the other departments of the University, offers excellent opportunities for advanced and more specialized study. Special lines of research can also be pursued in various departments by those who desire to work for a higher degree. The attention of advanced students is especially called to the graduate work outlined on page 348.

Laboratories.

A description of the various general laboratories of the University may be found by reference to the index. The special laboratories for pharmacy students are located in North Hall.

PHARMACEUTICAL CHEMICAL LABORATORY. This laboratory affords ample accommodation to the advanced students. Every student is assigned a desk which he alone uses. In addition to the apparatus assigned to individual students, the laboratory is supplied with a large still and an extraction apparatus, both operated with steam from the central heating plant; furnaces for destructive distillation, combustion furnaces, and other apparatus necessary for advanced work. The balance room and dark chamber is well equipped.

LABORATORY FOR PRACTICAL PHARMACY AND DISPENSARY. A laboratory has been equipped for individual rather than class instruction in practical pharmacy. It is well furnished with balances, percolation stands, extraction apparatus, water motors, prescription case, and all apparatus necessary in a complete laboratory of this kind. In the basement a room has been fitted to serve as comminution room, equipped with an electric motor, drug mills, mortars, tablet machines, centrifugal machine, ointment mill, mixing and sifting apparatus, etc.

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Collections.

The collections of the University, including the drug cabinet, are described on pp. 45-48.

Libraries.

For a statement as to general library facilities at the University in the city of Madison, see p. 37. The department library for ready reference is unusually well supplied with reference works and the best periodicals. The other department libraries, as well as the general library, are all on the same campus and, therefore, easy of access.

Terms of Admission.

The requirements for admission to the several colleges of the University are described on p. 57.

The special requirements for admission to the two-year pharmacy course are herewith repeated.

I. Graduates from high schools are admitted without examination and without practical experience in a drug store.

II. Non-graduates are admitted if they comply with the following requirements:—

1. They must be at least eighteen years of age.

2. They must present satisfactory certificates of *at least* one year's attendance from some standard high school, or its equivalent from a similar educational institution.

3. The time intervening between the secondary education and the college course should have been spent in a drug store, where physician's prescriptions are regularly compounded.

Degrees.

The degrees given by the several colleges are described on p. 87. The first degrees given in pharmacy are that of *Graduate in Pharmacy*, upon completion of the two-year course, and that of *Bachelor of Science* (*Pharmacy Course*), conferred upon candidates who have successfully met the requirements of the four-year course.

The advanced degrees are: *Master of Pharmacy*, conferred upon graduates in pharmacy; and of *Master of Science* and *Doctor of Philosophy*, conferred upon candidates who have a bachelor's degree.

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Fees and Expenses.

For tuition fees see p. 81; for laboratory fees, p. 83. An estimate of expenses for board and lodging will be found on p. 86.

COURSES OF STUDY.

Two-Year Course.

FIRST YEAR. FIRST SEMESTER.

Chemistry 3*. General Chemistry. The laboratory work accompanying this course is especially designed for pharmacy students. Eight-fifths credit. Associate Professor LENHER and Mr. BRANDEL.

Biology 1. General Biology. Introductory to both botany and zoology, and required as preliminary to all work in either department. *Two recitations, or lectures, and eight hours' laboratory work a week.* Professor HARPER, Mr. ALLEN, and Miss SHERMAN.

Botany 25. The Collection and Commerce of Crude Drugs. Laboratory and field work supplemented by lectures and recitations. One-fifth. Dr. DENNISTON.

Pharmacy 1. Laboratory Technique. The principles and practice of pharmaceutical operations, such as comminution, expression, decantation, filtration, maceration, percolation, diffusion, dialysis, crystallization, and precipation. Three-fifths. *W., F., at* 11. Mr. BRANDEL.

FIRST YEAR. SECOND SEMESTER.

Chemistry 3. General Chemistry continued as a three-fifths study.

Chemistry 10. Qualitative Analysis. First half of semester, daily. Professor DANIELLS and Mr. BRANDEL.

Chemistry 15. Quantitative Analysis. Second half of semester, daily. Professor DANIELLS and Mr. BRANDEL.

Chemistry 20b. Organic Chemistry for Pharmacy Students. Two-fifths course. Recitations and laboratory work. Assistant Professor HILLYER and Mr. BRANDEL.

Botany 20. Morphology and Classification of the Flowering Plants. An elementary course designed primarily for students in Pharmacy. The life histories and ecology of seed plants, with

*The figures refer to the numbers of the courses as given in the statements under Departments of Instruction.

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a comparative study of the structure of the principal families and the identification of common species. Field work will be an important feature. Excursions on Saturdays. *M., Tu., W., Th., F.*, 8 *to* 10. Dr. OLIVE and Miss SHERMAN.

Pharmacy 1. Laboratory Technique. Continuation of the work of the first semester. (See above).

SECOND YEAR. FIRST SEMESTER.

Chemistry 40. Advanced Chemistry. This course is especially designed for pharmacy students, the first semester being devoted to inorganic chemistry. Lectures and recitations, *Tu., Th., F., at* 10; *laboratory work daily.* Professor KREMERS and Mr. RABAK.

Chemistry 41. Plant Chemistry. As a three-fifths study supplementary to pharmacognosy. Recitations, *Mon., at* 9; *two laboratory periods.* Professor KREMERS and Mr. RABAK.

Botany 5. Vegetable Histology. A systematic study of the tissues of the phanerogams and ferns. Use of reagents and stains, section cutting and mounting. Dr. DENNISTON and Miss SHERMAN.

Botany 22. Pharmacognosy. This course presents to the student the main facts of the natural history of drugs, and the plants producing them. Two recitations a week the second semester of the junior year and the first semester of the senior year. Dr. DENNISTON.

Pharmacy 2. Pharmaceutical Technology. The study and manufacture of galonical and other preparations: waters, tinctures, fluid extracts, spirits, oleo-resins, etc.; also of pills, suppositories, ointments, plasters, etc. Lectures and recitations, *Tu., Th., at* 11; *three laboratory periods.* Assistant Professor FISCHER and Mr. TWEEDEN.

SECOND YEAR. SECOND SEMESTER.

Chemistry 40. Advanced Chemistry, Organic. Continuation of the first semester's work.

Chemistry 45. Alkaloidal Assay. *One-fifth credit.* Assistant Professor FISCHER.

Botany 21. Microscopical Examination of Drugs and Food Products. The object of this course is to study and illustrate the methods of identifying powdered drugs and food products and

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detecting adulterations. Three-fifths credit. Dr. DENNISTON and Miss SHERMAN.

Botany 22. Pharmacognosy. Continuation of first semester's work.

Pharmacy 3. Prescription Practice. The study of the prescription; practice in the compounding of physicians' prescriptions; also the study of physical, chemical and therapeutical incompatibilities. *Lectures and recitations, Tu., Th., at* 11; *two laboratory periods.* Assistant Professor FISCHER and Mr. TWEEDEN.

Pharmacy 10. The Economic Functions of the State. This course consists of a series of weekly lectures, historical and critical, on the state in its relation to industry, trade, and the professions, with special reference to pharmacy. First semester, 1904-05. Professor MEYER.

Pharmacy 11. Law Applied to Pharmacy. A course of lectures treating of the validity and construction of laws especially restraining the practice of pharmacy; of the liability of pharmacists both criminal and civil; for their own violations of laws and that of their agents; also for their own negligence and that of their agents.

Pharmacy 12. State Boards of Pharmacy. The development of state boards of pharmacy in the United States and their legal functions, with special reference to their duties as examining bodies.

Pharmacy 13. Special lectures by pharmaceutical practioners and others.

Four-Year Course.

Students who desire to include pharmaceutical studies as a part of their general college education will have to elect the prerequisite studies enumerated below to accomplish this end. Such a course, if to lead to the degree of Bachelor of Science (Pharmacy Course), must include courses 1, 2, and 3 in pharmacy, and course 22 in botany.

Basal sciences: Chemistry 1, Biology 1, Physics 1. These should be taken during the first and second years.

Advanced sciences: Chemistry 40 and Botany 5. These courses should be taken during the third year, in order that the courses in Pharmacy and Parmacognosy mentioned above may be taken during the fourth year.

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The language requirements of this course are English 1, French 1, and German 2S, which should be taken during the first and second years.

The major study and thesis may be taken in chemistry, biology, pharmacy, or any department in which the student is sufficiently prepared to do such work. For the rules governing the major study and thesis see p. 94.

Additional electives sufficient to make 120 unit hours may be chosen upon consultation with the student adviser for Pharmacy students.

Gymnastics and military drill are required during the first two years. See p. 93.

THE PRE-MEDICAL COURSE.

The facilities for preparation for practical medicine have been constantly increased in the College of Letters and Science. Not only is opportunity given for the study of subjects of which some knowledge is demanded for entrance into leading medical schools, but in addition a thorough training and facilities for research are offered in human anatomy, histology, embryology, neurology, and bacteriology, subjects among the most important of those included in the medical curriculum. Credit is given in the leading medical schools of the country for the studies here pursued. It is intended in the near future to offer the full work of the first two years of the standard medical curriculum.

General Requirements.

Students will be admitted to this course on compliance with the conditions imposed for entrance to the College of Letters and Science. (See p. 59.)

Persons twenty-one years of age, who are not candidates for a degree, and who wish to take special studies, are permitted to enter as adult special students upon giving satisfactory evidence that they are prepared to profit by the courses desired.

Students who have satisfied all the requirements for entrance, but do not wish to be candidates for a degree, will be admitted to any of the studies of this course for which they are properly prepared.

For the requirements for a degree, see p. 93.

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Preparation for Medicine.

A candidate for the degree of Bachelor of Arts, who desires special preparation for the study of medicine, is advised, first, to take courses in general biology and in chemistry, and then to choose his advanced work mainly from the departments of anatomy, bacteriology, and chemistry, in one of which his major should be taken. The course in psychology will prove of special value to one intending later to specialize in nervous and mental diseases, and the courses in botany and zoology to those desirous of broad biological foundation for medical study. Physics should be taken in preparation for physiology. German and French are essential to one who desires to keep up with the progress of medicine, and Italian is of great value.

To a student desiring to shorten the time devoted to the sciences on which practical medicine is based, the following schedule is suggested, since it should permit him to take advanced standing in a medical school on graduation from the University. Those desiring to devote more time to the basal sciences of medicine or to general culture than this schedule allows are advised to arrange their work so as to take human anatomy and bacteriology as graduate studies.

The work offered in the Summer Session may also be utilized to advantage.

ARRANGEMENT OF STUDIES.

FRESHMAN YEAR.

English 1; French or German; Biology 1; Mathematics 1 and 2.

SOPHOMORE YEAR.

French or German; Chemistry 1; Anatomy 5.

JUNIOR YEAR.

French or German; Bacteriology 1 and 2; Anatomy 10 and 15; Chemistry 20.

SENIOR YEAR.

Physics 1; Anatomy 21 and 26; Thesis.

For detailed information regarding the courses of special advantage to the student preparing for practical medicine, see the

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accounts given of the various departments in the College of Letters and Science, especially those of anatomy, bacteriology and hygiene, biology, botany, zoology, chemistry, philosophy, physics, English, French, and German.

A special bulletin describing the courses preparatory to practical medicine has been published. A copy of this, as well as further information regarding the course, may be obtained by applying to the Registrar of the University.

HOME ECONOMICS.

The department of Home Economics has two purposes. The first is to offer elective courses which shall be available as part of the general education of all the young women in the College of Letters and Science. These courses are given on page 188. The second purpose is to offer a four-year course for those who wish to specialize in Home Economics. This course leads to the degree of Bachelor of Arts, and includes:

1. The studies required of all regular students in the College of Letters and Science.
2. Prescribed courses in general science.
3. Special courses in Home Economics.
4. Free electives.

Requirements for Admission.

The requirements for admission to this course are the same as for admission to the other courses in the College of Letters and Science. See p. 57.

OUTLINE OF THE COURSE OF STUDY.

The number after a study indicates the number of hours per week.

FIRST YEAR.

First Semester: English 3; Language 4; Mathematics 3; Chemistry 5; Physical Training 2.

Second semester: Continuation of the first.

SECOND YEAR.

First semester: Analytical Chemistry 3; Langauge 2 or 4; Biology or Physics 5; House Sanitation 3; electives 2 or 4.

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Second semester: Language 2 or 4; Biology or Physics 5; Food Analysis 3; House Decoration 1; Household Economy 2; electives 2 or 0.

THIRD YEAR.

First semester: Bacteriology 5; Physiology 3; the Selection and Preparation of Foods 5; Language 2.

Second semester: Bacteriology 3; Physiology 2; Language 2; electives 6.

FOURTH YEAR.

First semester: Organic chemistry 5; Dietetics 3; Language 2; electives 5.

Second semester: Organic Chemistry 5; Language 2; electives 8.

General Information.

Students in Home Economics will take General Chemistry, Biology, Physiology, the first semester of Organic Chemistry, and the first semester of Bacteriology with the other college students. The analytical work in Chemistry, the second semester's work in Organic Chemistry, and the second semester's work in Bacteriology will be adapted to the special needs of the department. In order to give larger opportunity for electives than would otherwise be possible, the student is allowed to choose between Physics and Biology; but unless her preparation in the science not chosen has been exceptionally good, she is advised to elect it at some time during her course.

One of the languages taken must be German.

Students are advised to elect American History and Economics 1, and to so arrange their courses in sciences as to be able to take their major in science.

Because of the fact that courses in cookery have not been introduced into all the secondary schools, the Director of the department may require of any students practical work not to exceed six semester hours during the four years course. For this work no credit will be given in the College of Letters and Science.

For detailed information about the department apply to Caroline L. Hunt, South Hall, Madison, Wis.

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THE COLLEGE OF ENGINEERING.

FACULTY.

CHARLES R. VAN HISE, Ph., D., LL. D., President of the University.
FREDERICK E. TURNEAURE, C. E., Dean, and Professor of Engineering.

Officers of Instruction in Technical Departments.

STORM BULL, M. E., Professor of Steam Engineering.
CHARLES F. BURGESS, E. E., Associate Professor of Electrical Engineering.
CHARLEE H. BURNSIDE, M. A., Assistant Professor of Mechanics.
DUGALD C. JACKSON, C. E., Professor of Electrical Engineering.
CHARLES I. KING, Professor of Mechanical Practice.
JOHN G. D. MACK, M. E., Professor of Machine Design.
EDWARD R. MAURER, B. C. E., Professor of Mechanics.
DANIEL W. MEAD, C. E., Professor of Hydraulic and Sanitary Engineering.
JAMES D. PHILLIPS, B. S., Assistant Professor of Mechanical Drawing.
*ARTHUR W. RICHTER, M. E., Professor of Experimental Engineering.
GEORGE C. SHAAD, B. S., Assistant Professor of Electrical Engineering.
JOHN W. SHUSTER, B. S., Assistant Professor of Electrical Engineering.
LEONARD S. SMITH, C. E., Assistant Professor of Topographic and Geodetic Engineering.
*BERNARD V. SWENSON, E. E., Assistant Professor of Electrical Engineering.
WILLIAM D. TAYLOR, C. E., Professor of Railway Engineering.
HALSTEN J. B. THORKELSON, M. E., Assistant Professor of Steam Engineering.
OLIVER B. ZIMMERMAN, M. E., Assistant Professor of Machine Design.

*On leave of absence for the academic year 1904-05.

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BERTIE S. ANDERSON, Machinist, and Assistant in Shop Practice.
JAMES T. ATWOOD, B. S., Instructor in Experimental Engineering.
MICHAEL BONN, Assistant in Foundry Practice.
WILLIAM BRADFORD, B. S., Instructor in Experimental Engineering.
HOWARD S. ELLIOTT, B. S., Instructor in Electrical Engineering.
FREDERICK W. HUELS, B. S., Instructor in Experimental Engineering.
WILLIAM S. KINNE, B. S., Instructor in Mechanical Drawing.
HENRY KRATSCH, Machinist, and Instructor in Mechanical Practice.
WILLIAM G. LOTTES, Instructor in Forge Practice and Repairing.
FRANCIS M. MCCULLOUGH, B. S., Instructor in Civil Engineering.
WALTER H. MCINTOSH, Instructor in Woodworking.
HENRY H. MCPHERSON, M. E., Instructor in Experimental Engineering.
ADAM V. MILLAR, M. S., Instructor in Mechanical Drawing.
HENRY F. MOORE, M. M. E., Instructor in the Testing Laboratory.
GEORGE M. NORMAN, B. S., Instructor in Electrical Engineering.
GEORGE G. POST, B. S., Assistant in Electrical Engineering.
JOHN C. POTTER, B. S., Assistant in Electrical Engineering.
WILLARD A. PRICE, B. S., Instructor in Civil Engineering.
CLINTON B. STEWART, C. E., Instructor in Mechanics.
LESLIE F. VAN HAGAN, Instructor in Mechanical Drawing.
JAMES W. WATSON, E. E., Instructor in Electrical Engineering.
LESTER D. WILLIAMS, B. S., Instructor in Civil Engineering.

Officers of Instruction in Other Departments.

GEORGE C. COMSTOCK, Ph. B., LL. B., Professor of Astronomy, and Director of Washburn Observatory.
CHARLES A. CURTIS, A. B., Captain U. S. Army, Professor of Military Science and Tactics.
WILLIAM W. DANIELLS, M. S., Sc. D., Professor of Chemistry.
LINNAEUS W. DOWLING, Ph. D., Assistant Professor of Mathematics.
JAMES C. ELSOM, M. D., Professor of Physical Training, and Director of the Gymnasium.
NEVIN M. FENNEMAN, Ph., D., Professor of General and Physiographic Geology.
WILLIAM D. FROST, Ph. D., Assistant Professor of Bacteriology.

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WILLIAM F. GIESE, A. M., Associate Professor of Romance Languages.
HOMER W. HILLYER, Ph. D., Assistant Professor of Organic Chemistry.
WILLIAM H. HOBBS, Ph. D., Professor of Mineralogy and Petrology.
LOUIS KAHLENBERG, Ph. D., Professor of Physical Chemistry.
HENRY B. LATHROP, A. B., Associate Professor of English Literature.
CHARLES K. LEITH, Ph. D., Professor of Economic and Structural Geology.
VICTOR LENHER, Ph. D., Associate Professor of Chemistry.
ERNEST B. SKINNER, Ph. D., Assistant Professor of Mathematics.
CHARLES S. SLICHTER, M. S., Professor of Applied Mathematics.

PHILIP ADAMS, B. A., Instructor in English.
FLORENCE E. ALLEN, M. L., Instructor in Mathematics.
EDWIN S. BISHOP, B. L., Assistant in Physics.
ARTHUR BEATTY, Ph. D., Instructor in English.
ELIOT BOARDMAN, A. B., Assistant in French.
ALLEN L. COLTON, M. A., Instructor in Physics.
EDWARD A. COOK, B. L., Instructor in English.
THOMAS H. DICKINSON, M. A., Instructor in English.
PHILIP J. GENTNER, M. A., Instructor in English.
SCOTT H. GOODNIGHT, M. A., Instructor in German.
MARTIN H. HAERTEL, B. S., Ph. B., Assistant in German.
CHARLES H. HANDSCHIN, Ph. D., Instructor in German.
JOHN F. HAUSSMANN, A. M., Assistant in German.
RALPH B. MACNISH, B. L., Instructor in French.
FREDERICK W. MEISNEST, Ph. D., Instructor in German.
LONALLEN F. MILLER, M. A., Instructor in Physics.
GEORGE N. NORTHROP, A. B., Instructor in English.
HARRISON E. PATTEN, Ph. D., Instructor in Chemistry.
WARREN M. PERSONS. B. S., Instructor in Mathematics.
ARTHUR RANUM, A. B., Instructor in Mathematics.
EDWARD B. SCHLATTER, M. A., Instructor in French.
ARTHUR R. SEYMOUR, M. L., Instructor in French.
JESSE D. SUTER, Student Assistant in Mathematics.
A. HOYT TAYLOR, B. S., Instructor in Physics.
EARLE M. TERRY, A. B., Assistant in Physics.

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CHARLES A. TIBBALS, JR., A. B., Instructor in Chemistry and Assaying.

HENRY C. WOLFF, M. S., Instructor in Mathematics.

Organization of the College.

The College of Engineering is organized in the belief that a thorough-going fundamental training is the first essential to a successful engineer, but that this fundamental training may be best secured not alone by theoretical study, but by giving attention as well to the practical applications of the principles involved. It is further a leading thought that after the fundamental principles have been mastered, a certain measure of specialization in the main lines of engineering is advisable, because of the great development of engineering in recent years, and the various phases which it is rapidly assuming. It is the endeavor of the college to combine a reasonable amount of specialization during the later years of its courses with a thorough grounding in the fundamentals during the earlier portions; and in carrying out this plan, it endeavors to make the mathematical and theoretical courses strong in the earlier years, and the applied courses as strong in the later years, while the draughting and shop courses continue progressively from the beginning to the end. It also introduces sufficient foreign language to enable its graduates to read the professional German or French literature, and aims to give so much of a mastery of the English language as to enable its graduates to present professional subjects with ease, clearness, and effectiveness.

Requirements for Admission.

The requirements for the admission of regular students are stated fully on p. 57.

Admission of Special Students.

Candidates under twenty-one years of age desiring to take special courses will be required to have the same qualifications as candidates for one of the regular courses of the University.

Persons over twenty-one years of age, *who are not candidates for a degree*, and who wish to take special studies, will be permitted to do so upon giving satisfactory evidence that they are prepared to take the desired studies advantageously. A good

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knowledge of elementary algebra and geometry is essential. If they subsequently desire to become candidates for a degree, or to take a regular course, they must pass the required entrance examination.

Preparation in Algebra for Engineering Courses.

Special attention is called to the changes in the requirements in algebra as set forth on page 59, and which become effective at the beginning of the academic year 1905-06.

In performing the fundamental operations of algebra, such as multiplication and division, the use of parentheses, the solving of numerical and literal equations of the first and second degree, the simplification of fractions and radicals, and the putting of problems into equations, it is of the first importance that the student should have distinct notions of the meaning and reasons for all that he does, and be able to state them clearly in his own language. He should be able to perform all of these operations, even when somewhat complex, with rapidity, accuracy, and neatness. In his preparatory studies the student is advised to solve a great many practical problems, and to describe fully the reasons for the steps taken.

Student Advisers.

In the selection and arrangement of studies, all students are under the supervision of advisers. It is the duty of the advisers to issue class cards at the opening of each semester, admitting students to their classes, to receive the regular semester reports from instructors, and special reports on deficient students, and to report to the faculty all cases requiring special action.

Reports to parents or guardians on the work of students, are sent from the Registrar's office at the end of each semester.

Fees and Expenses.

Tuition for residents of the State of Wisconsin...	FREE.
Tuition for non-resident students—per semester..	$20 00
General fee—first semester.....	15 00
General fee—second semester.....	15 00
Engineering periodical fee for the year.....	1 00
Gymnasium fee, per semester.....	1 00

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A laboratory fee of $2.00 per semester, for each two hours' work per week, is charged in all the engineering laboratories, and for the use of surveying instruments in the field.

Students working in any of the other laboratories of the University are also required to pay a fee or to make a deposit to cover the cost of the materials and repairs to instruments used by them. For a list of these fees, see page 83.

At the beginning of the freshman year students must be prepared to meet an expenditure of about $70.00 for laboratory fees, drawing instruments, text books, and military uniform. For the second semester these expenses will not exceed $10. For subsequent years the fees and text books will amount to $15 to $20 a semester.

Rooms, furnished and unfurnished, can be obtained in the city at reasonable rates. The cost of board in clubs is from $2.50 to $3.00 per week; in private families from $2.50 to $4.00 per week.

EQUIPMENT.

Buildings.

The College of Mechanics and Engineering now occupies a building constructed for its special use, which is unusually complete and well arranged. All the professional work of the college is given in this building and in its accompanying laboratories, except some of the electrical laboratory work and the shop instruction, whch are given in the commodious shop buildings near by. For chemistry the engineering students go to the chemical building, for physics and other natural sciences to Science Hall, and for language, mathematics, and other similar work, to the literary halls of the University. In this way the students of engineering come into daily contact with the students in the other University courses, to the great advantage of all classes.

Libraries.

For a general account of the library facilities of the University see page 37. The College of Mechanics and Engineering subscribes for about one hundred and fifty technical periodicals, and also purchases duplicate copies of standard engineering works of reference, one set of which, and the engineering periodicals, are kept in the engineering reading room, on the first floor of the Engineering Building, in order to facilitate the frequent use of

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them by the engineering students. The bound files of technical periodicals in the library are unusually complete, and additions are made every year.

Laboratories and Apparatus.

The engineering laboratories are well equipped for purposes of instruction and investigation.

THE TESTING LABORATORY occupies the high sub-basement under the assembly room of the Engineer Building. It is supplied with a recently purchased Riehlé torsion machine of one hundred and twenty-five thousand inch-pound capacity, permitting the testing of a shaft fifteen feet long and one and one-half inch in diameter. There is also installed a new impact machine, a one-hundred-thousand-pound Riehlé automatic and autographic testing machine, permitting the testing of materials of the larger sizes used in practice, and a beam testing machine, with a capacity of one hundred thousand pounds on a base of twenty-four feet. In addition to these there are also other Riehlé machines, and Olsen and Thurston machines for making tests in tension, compression, bending, and torsion. These machines are supplied with exten-someters, clamps, devices for autographic records, and other special devices. A set of standard appliances for testing the wearing and cementing properties of road-building rock has also been installed.

THE CEMENT LABORATORY contains a full supply of necessary apparatus for making tests according to the American Society of Civil Engineers' standard; baths, self-recording thermometers, Boehme hammer, complete 1,000-lb. Riehle and Fairbanks testing machines, etc. A power-driven stone saw, and grinding and polishing wheels are available in another room. The machines in the testing laboratory are also used for testing brick, stone, and cement. The foundry rattler is available for paving brick tests.

THE HYDRAULIC LABORATORY contains high and low level tanks fitted for experimenting upon the flow of water through orifices, nozzles, pipes, and over weirs. In the laboratory are several water motors, water meters, current meters, lines of pipe, hydraulic and steam rams, etc., all available for experimental work. There is also a convenient supply of gauges and other apparatus required in accurate hydraulic experiments.

THE MECHANICAL LABORATORY.—The main laboratory, which is 74 feet by 50 feet, is a one-story addition in the rear of the new

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building, and is so placed that the wings, which ultimately will be added to the building, will leave this laboratory in the court thus created. The floor of this laboratory is on the same level as the main basement of the building; a gallery arranged especially for visitors runs around the whole laboratory, to which gallery one gains entrance from the first floor. A part of this wide gallery is partitioned off, a portion forming laboratories for special investigation. The main laboratory is well equipped with a variety of steam engines, specially arranged for experimental work. The most important of these is a fifty horse-power cross compound engine, so arranged that either cylinder can be supplied with live steam from the boilers and run as a single cylinder engine. The surface condenser and air pump can also be disconnected so that the engine may be run as a non-condensing one. Both cylinders and receiver are provided with steam jackets, which may be used at will. By means of a Proell governor the number of revolutions may be varied from 50 to 125. The cut-off of the steam may vary automatically between zero and ninety-five per cent. of the stroke.

The above engine is also connected to a fifty horse-power superheater, capable of superheating the steam 200 degrees F.

There is also installed a new fifteen-ton refrigerating plant, consisting of a Corliss engine direct connected to a horizontal double-acting ammonia compressor. This machine is cross-connected to a five-ton, vertical, three-cylinder, single-acting ammonia compressor belted to an electric dynamo. With the above compressors there are installed double pipe condensers and brine coolers, brine tanks, brine coils, and ventilating coils for the cooling of rooms.

This laboratory also contains a fifty horse-power two-stage air compressor directly connected to a compound condensing engine equipped with the Meyer valve gear; also various other types of steam, gas, gasoline, and hot air engines. Among the more important pieces of apparatus is a vertical three-cylinder engine of seventy-five horse-power capacity.

The laboratory is supplied with friction brakes, transmitting dynamometers of various kinds and capacities, a mercury column, and other means for testing steam and vacuum gauges and indicators, and various devices for special tests. There are also the necessary tanks, weighing apparatus, pyrometers, thermometers, calorimeters, some forty indicators, revolution counters,

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tachometers, recording gauges, reducing motors, water meters, etc., for making complete tests of the economy and capacity of boilers and engines. The laboratory is also supplied with a very large number and variety of injectors, and with special facilities for making tests of the same.

The boiler house of the University, which furnishes steam for nearly all of the buildings of the institution, both for heating and for power purposes, is also equipped in such a manner that experimental work with reference to the economy of boilers under various conditions may easily be carried out.

GAS ANALYSIS AND FUEL LABORATORIES.—In the eastern wing of the building are the separate laboratories for gas and coal analysis; these rooms are both large and well lighted, and furnish excellent opportunities for extended researches in these very important branches of study. The equipment includes the Carpenter Coal Calorimeter, Mahler Bomb Calorimeter, Junker Gas Calorimeter, and many forms of flue gas apparatus.

THE ELECTRICAL LABORATORIES are liberally supplied with scientific and commercial instruments, and are arranged for instruction and investigation. With the space and apparatus which are allowed through the generosity of past legislatures, the equipment has been made unusually complete in the lines of continuous current and single and polyphase alternating current generation and distribution, and commercial electrochemistry and electrometallurgy.

The dynamo collection consists of a large number of continuous current dynamos and motors (including several arc light dynamos) of various types and sizes and a similar number of alternating current dynamos and motors likewise of various types and sizes. They are specially installed for the purpose of instruction and experiment. Over fifty dynamos of various types are supplied for exclusive laboratory use. The largest one has a capacity of 270 horse power and the smallest one a capacity of a fraction of a horse power. The greater number have capacities ranging between five horse power and twelve horse power, which makes them particularly adapted to the purpose of laboratory instruction. Two engines,—one a high speed Ideal engine of 150 horse power driving a Bullock continuous current dynamo, and the other a Filer and Stowell Corliss engine of 300 horse power driving a National polyphase alternator,—are provided to furnish the necessary power, and electric currents are distributed

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over the laboratories for use in driving machinery, operating electrical furnaces, and other desirable purposes.

All necessary apparatus is supplied for use in testing dynamos: including large lamp banks, transformer banks and water rheostats for loading generators; special Prony brakes, etc., for loading motors; and accurate electrical measuring instruments of the various useful types. An extensive collection of transformers and an equally comprehensive bank of integrating electric meters afford opportunities for routine testing and the study of problems relating to the design, construction and use of such apparatus.

Several large rooms are occupied by the appliances and apparatus required for instruction and experiments relating to electric batteries, electrolysis, electroplating, and electromentallurgy. Several smaller rooms are fitted up for experimental investigations. The equipment for these laboratories consists of dynamos and tanks for depositing metals and for other electrolytic processes, apparatus for cleaning, polishing, precipitating, filtering and other processes. An electric furnace room has been fitted up with rheostats and instruments for operating electric furnaces, power being supplied by the large generators described above; various electric furnaces for electrometallurgical operations requiring the intense heat of the electric arc are operated therefrom. Sources of electrical current, both alternating and direct, are available for experimental work, alternating pressures as high as 50,000 volts being employed. The equipment is one of the first and most complete of its kind.

Other rooms are dedicated to work in electrical testing, measuring illumination, and various other branches of laboratory instruction and investigation.

A great number of amperemeters, voltmeters, wattmeters, Wheatstone bridges, variable self-inductance and mutual-inductance boxes, condensers, galvanometers, electrodynamometers, electric balances, 100,000 ohm and megohm resistances, Clark cells, Burgess electrometer testing sets, and other apparatus are supplied for general use, while standard apparatus for determining the adjustments of the general instruments is at hand. Special means are provided for the important functions of insulation testing, testing the magnetic qualities of metals (including a Ewing hysteresis tester, Ewing permeability bridge, magnetic balance, and other apparatus), for photometry of Nernst, arc,

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and incandescent lamps, and for measuring the distribution of illumination, for which the equipment is very full, two imported oscillographs, electrical condensers for use with alternating current circuits, etc. Apparatus is also provided for class-room demonstration, such as apparatus for demonstrating the phenemona of polyphase current transformation and polyphase motors, a fine set of models and charts illustrating the different forms of armature windings, etc.

A Thomson electric welder, located in the dynamo room, gives opportunity for instruction upon the electrical working of metals, and a transformer of twenty kilowatts capacity furnishes alternating current at 50,000 volts pressure for instruction in high pressure testing and the phenomena of high pressure electric power transmission. Alternating and polyphase (2-phase and 3-phase) currents of the ordinary frequencies are on tap, at the switch-boards, and other frequencies may be generated at will by means of rotary converters, one of which has a capacity of 30 kilowatts.

The demand, from both undergraduate and graduate students, for accommodations in these laboratories has grown so rapidly that another large addition has just been made to the laboratory building for the purpose of increasing the already extensive facilities briefly described in the above paragraphs. The use of this addition was entered upon at the opening of the college year of 1904-05.

All electrical laboratory work is made to conform with, and to illustrate, the class-room instruction. Of the total number of hours given to instruction in the electrical engineering courses, about one-half is devoted to work in the laboratories.

THE BRIDGE ENGINEERING DEPARTMENT owns a set of Fraenkel's autographic apparatus for the testing of bridges under moving train loads. This includes two extensometers for measuring strains in members and a deflectometer for measuring vertical and lateral deflections. The department also possesses a large French model of a skew arch bridge, several large size iron models of bridge joints, and a large collection of drawings and photographs, to which additions are constantly being made.

THE ASSAY LABORATORY is situated in the south part of the basement of the chemical laboratory. It has separate rooms for furnaces, tables, wet assaying, and balances. The furnace room is supplied with eleven crucible and three muffle furnaces, as well

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as a small gas plant. It has steam power, a Sturtevant blower, bullion rolls, a Blake ore crusher, and other pulverizers. The table room has space for twenty-four students, and is well supplied with ordinary balances. In the balance room are first-class quantitative balances by Becker, and an Oertling gold balance.

THE SURVEYING LABORATORY.—By an agreement with the director of Washburn Observatory, the surveying laboratory shares in the free use of the extensive apparatus belonging to that observatory, and including, in addition to the large equatorial telescope and the meridian circle, collimators, transit micrometers, chronograph, sidereal and meantime clocks, zenith telescopes, a transit instrument of the broken type, chronometers, an altazimuth, a universal instrument of the German type, spherometer calipers, and a complete set of meteorological instruments.

In addition to this equipment the surveying laboratory contains all the portable, astronomical, and field instruments needed for an extensive triangulation, topographic and hydrographic survey, also for all the work done in railway engineering, including theodolites, altazimuth, tidal gauge, heliotropes, Kern precise-level and new U. S. C. & G. S. precise-level outfits, sounding apparatus, base-line apparatus, current meters, transits, compasses, levels, plane-tables, telemeters, and such special instruments as planimeters, pantographs, sextants, computing machines, aneroid barometers, etc.

THE MACHINE SHOP affords excellent facilities for mechanical practice. It embraces a main machine room properly equipped; a carpenter shop supplied with wood-working machines; a forge room provided with forges and their equipment with blast and exhaust fan; a foundry room whose equipment consists of a cupola, brass furnace, and core oven, with the necessary small tools; a wood-work room supplied with benches, carpenter tools, and wood turning lathes; and a pattern room furnished with the requisite tools. The shop is supplied with covenient lockers, closets, and washroom with hot and cold water.

BACTERIOLOGICAL LABORATORIES.—For a description of these see page 43.

THE ENGINEERING MUSEUM contains a complete set of Schroeder's models for descriptive geometry, including shades, shadows, and perspective; also a small collection of Schroeder's kinematic models, besides a number of smaller models, made by students,

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illustrating problems in kinematics. An excellent industrial collection is in process of development.

The standards of weight and measure belonging to the state are kept in the civil engineering department, and all official comparisons are made here.

COURSES OF STUDY AND DEGREES.

Four-Year Courses.

The College of Engineering offers six systematic four-year courses as follows:

CIVIL ENGINEERING,
SANITARY ENGINEERING,
MECHANICAL ENGINEERING,
ELECTRICAL ENGINEERING,
APPLIED ELECTROCHEMISTRY,
GENERAL ENGINEERING, including an elective course in MINING ENGINEERING.

Students who complete any one of the above four-year courses are graduated with the degree of *Bachelor of Science*, the diploma containing a specific designation of the course taken.

Higher Degrees.

The degree of *Civil Engineer*, *Mechanical Engineer*, and *Electrical Engineer* are conferred as second degrees upon Bachelors of Science in the Civil, Mechanical, and Electrical Engineering Courses respectively, or in allied courses, (1) who pursue advanced professional study at the University for one year, and present a satisfactory project or thesis; or (2) who present suitable evidence of three years of professional work, of which one must be in a position of responsibility, and present a satisfactory thesis.

The degrees of *Master of Science* and *Doctor of Philosophy* are conferred upon graduates of the Engineering courses under the same requirements as apply to graduates of the College of Letters and Science. For a statement of these requirements see p. 357.

Five and Six-Year Courses.

With the rapid development in the industrial and commercial life of the country, the work of the engineer is constantly being extended to new and wider fields. These changing conditions de-

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mand that the training of the engineer shall be as broad and thorough as possible, for experience shows that those who prove to be the most successful in handling large enterprises are those who have breadth of view coupled with high technical attainments. Very often, indeed, the technical requirements are of secondary importance compared to the ability to secure the economical execution of work through efficient organization. It is coming to be generally recognized that a four-year technical course following the high school course is not an adequate preparation for those who are to fill the most important positions in the engineering profession; and the University would urge upon all those who can afford the time to extend their studies over a period of five or six years. To those who can thus extend their course the University offers excellent opportunities for acquiring a more thorough preparation by a combination of studies of the College of Letters and Science with the technical studies of the College of Engineering. Provision is made for carrying out such a combination of studies in two ways, as indicated below.

A.

Courses leading to the B. S. degree at the end of five years, and the professional degree (C. E., M. E., or E. E.) at the end of six years.

Courses of study have been arranged in which the work included in the regular four-year engineering course is distributed over a period of five years, and the time thus available is thrown open for election in any department of the University. The amount of time open for election is sufficient to enable the student to pursue satisfactorily some one or two lines of study in the College of Letters and Science, the College of Law, or the College of Agriculture, and thus greatly to strengthen his course. By taking such a five year course a student may, for example, secure all of the essential studies of the Course in Commerce, together with a full Engineering course. Outlines of the five-year courses with suggested groups of electives are given on page —.

At the end of the fourth year of the five-year course no degree is given unless the student so elects. In this case he is required to write a thesis, and the degree will be *Bachelor of Science, General Engineering Course*, the work of the first four years corresponding closely to that course. The degree conferred at the end of the five years is the same as that given on the completion of

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the regular four-year course in Civil, Mechanical, or Electrical Engineering. Students pursuing their work for a sixth year will be ranked as graduate students, and will receive the professional degree of C. E., M. E., or E. E.

B.

Courses leading to the B. A. degree in four years, and to the B. S. degree in two additional years.

Students desiring to secure the collegiate degree at the end of four years, and the engineering degree at the end of two additional years, will register in the College of Letters and Science during their first four years of residence. They will elect during their collegiate course the studies of the first two years of the engineering course which they plan to pursue later, with the exception of shop work. This may be taken as an extra study, or may be taken during vacation time. Upon receiving the B. A. degree they will be admitted as juniors in the College of Engineering.

Modern Language Requirements in all Engineering Courses.

1. When German is offered for entrance: There is required a four-fifths course in German throughout the freshman year, and a three-fifths course in technical German for one semester of the sophomore year.

2. When French is offered for entrance: There is required a four-fifths course in German or Spanish throughout the freshman year, and a three-fifths course in French for one semester of the sophomore year.

3. When four years of Latin is offered for entrance: There is required a four-fifths course throughout the freshman year, and a three-fifths course for one semester of the sophomore year in either French, German, or Spanish.

4. When neither a modern language nor Latin is offered for entrance: Students who are well prepared in all their work will be received without a preparation in modern language, but subject to a condition in the same. In this case there will be required a four-fifths course in either German or French throughout the freshman year, this being in lieu of the modern language requirements for entrance. If German be taken in the freshman year, there will be required a four-fifths course in German

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throughout the sophomore year, and a three-fifths course in technical German for one semester of the junior year. If French be taken in the freshman year, there will be required a three-fifths course in French for one semester of the sophomore year, and a four-fifths course in German or Spanish throughout the junior year.

For those who come prepared in modern language, and who elect to take the course in five years, an additional modern language may be taken as a four-fifths course in the third year.

The modern language requirements, as given in the detailed statements below, must be interpreted by, and made consistent with, the general requirements as stated above.

Inspection Tours.

An inspection tour by the members of the senior class is made each year. In this tour great manufacturing establishments and other important private and public engineering works in Chicago, Milwaukee, and elsewhere are visited. These tours are made under the guidance of the professors, and are deemed an essential part of the student's work.

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OUTLINE OF ENGINEERING COURSES.

FOUR-YEAR COURSES.

Freshman Year.—All Courses.

Note.—In reckoning the hours per week required for the various studies, two hours of laboratory, draughting room, field, or shop work count as one hour of class-room work, which is the unit in this outline.

FIRST SEMESTER.

	H'RS PER W'K.
German 2E,* French 3, or Spanish 3	4
English 1	3
Mathematics 101, Algebra	5
Chemistry 2	3
Mechanical Drawing 1	3
†Topographical Engineering 2, or Shopwork 1	1

SECOND SEMESTER.

German 2E, French 3, or Spanish 3	4
English 1	3
Mathematics 102 and 103 (Trigonometry and Analytical Geometry)	5
Chemistry 2	3
Mechanical Drawing 2	3
†Topographical Engineering 2 or Shopwork 2	1

CIVIL ENGINEERING COURSE.

Sophomore Year.

FIRST SEMESTER.

Mathematics 105 (Calculus)	5
Physics 101	5
Topographical Engineering 3 (Elementary Surveying)	4
Mineralogy 2 (Blow-pipe Analysis)	2
Topographical Engineering 1 (Topographic Drawing)	1
Mechanical Drawing 3 (Descriptive Geometry)	3

*The figures in the text refer to the numbers of the courses of study.

†Topographical Engineering is required of Civil Engineers, and Shop-work of Mechanical and Electrical Engineers.

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SECOND SEMESTER.

	Hrs. per W'k.
Mathematics 105 (Calculus)	3½
Physics 101	5
German 3E, French 7, or Spanish 4	3
Mechanics 1a and 1b	5
Topographical Engineering 1 and 4	4

Junior Year.

FIRST SEMESTER.

Mechanics 3a, 3b	5
Mechanics 2	2
Steam Engineering 7	2
Mechanical Laboratory 3	1
Structural Engineering 1 (Structural Details)	3
Railway Engineering 1	5
Materials of Construction 1	3

SECOND SEMESTER.

Hydraulics 1 and 3	3
Railway Engineering 3 (Maintenance of Way)	2
Structural Engineering 2, 3, 4a (Masonry)	4
Structural Engineering 5a (Bridge Stresses); 7a (Bridge Design)	5
Materials of Construction 2 (Testing Laboratory)	1½
Astronomy	4
Topographical Engineering 5 (Geodesy)	2
or Topographical Engineering 6 (Trigonometric Survey)	2 weeks
Elective	2-4

Senior Year.

FIRST SEMESTER.

Materials of Construction 2 (Testing Laboratory)	1½
Structural Engineering 4b (Dams and Sterotomy)	3
Structural Engineering 5b (Bridge Stresses), 6, 7b (Bridge Design)	6
Railway Engineering 5 (Railway Economics)	2
Hydraulic Engineering 11 (Water Supply)	3
Elective and Thesis	6

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SECOND SEMESTER.

	Hrs. per W'k.
Railway engineering 7 (Tunnels and Substructures)	1½
Rivers and Canals 1	1½
Hydraulic Engineering 12 (Sanitary Engineering)	3
Roads and Pavements	2
Contracts and Specifications	1
Thesis and Elective	12

Graduate Courses.

For graduate students and students desiring to specialize, opportunity is afforded in the elective courses and in courses arranged on consultation with the instructors, for advanced study in railway, structural, municipal, topographic, or geodetic engineering, and for special laboratory investigations.

SANITARY ENGINEERING COURSE.

Sophomore Year.

Same as the Civil Engineering Course, p. 229.

Junior Year.

FIRST SEMESTER.

Mechanics 3a, 3b	5
Hydraulics 1 and 3	3
Railway Engineering 1	5
Biology of Water Supplies	5
Chemistry 12	3

SECOND SEMESTER.

Railway Engineering 3 (Maintenance of Way)	2
Structural Engineering 2, 3, 4a (Masonry)	4
Structural Engineering 5a, 7a (Bridge Stresses, Roof and Bridge Design)	5
Chemistry 14 (Water Analysis)	4
Materials of Construction 1, 2	6
Topographical Engineering 6 (Trigonometric Survey)	2 weeks

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Senior Year.

FIRST SEMESTER.

	Hrs. per W'k.
Steam Engineering 7 (Steam Engine)	2
Mechanical Laboratory 3	1
Structural Engineering 4b (Dams and Sterotomy)	3
Structural Engineering 6, 7b (Bridge Design)	4
Hydraulic Engineering 11, 13 (Water Supply)	5
Steam Engineering 8 (Heating and Ventilation)	3
Elective and Thesis	3

SECOND SEMESTER.

Railway Engineering 7 (Tunnels and Substructures)	1½
Hydraulic Engineering 12, 13 (Sewerage and Drainage)	5
Roads and Pavement	2
Electrical Installations 11	4
Contracts and Specifications	1
Thesis and Elective	7

MECHANICAL ENGINEERING COURSE.

Sophomore Year.

FIRST SEMESTER.

Mathematics 104 (Analytical Geometry, Calculus)	5
Physics 101	5
Shop-work 3, 4, 5, 7 (Bench and Machine work in Iron, and Forging)	4
German 3E, French 7, or Spanish 4	3
Mechanical Drawing 3 (Descriptive Geometry)	3

SECOND SEMESTER.

Mathematics 104	5
Mechanics 1a, 1b	5
Physics 101	5
Machine Design 1 (Kinematics)	4
Shop-work 6 (Machine Work)	1

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Junior Year.

FIRST SEMESTER.

	Hrs. per W'k.
Mechanics 3a, 3b	5
Steam Engineering 1, 2 (Thermodynamics, Heat Engines)	5
Hydraulics 1	2
Machine Design 3 (Elementary Design)	6
Shop-work 8 (Gears and General Shop-work)	3

SECOND SEMESTER.

Materials of Construction 1, 3	4½
Hydraulics 2	2
Steam Engineering 3, 4 (Steam Engines, Boilers)	4
Mechanical Laboratory	1½
Machine Design 4 (Crane Design and Graphic Statistics)	5
Shop-work 9, 10 (Machine Construction)	4

Senior Year.

FIRST SEMESTER.

Applied Electro-Magnetism 2, 3 (Electrical Machinery, Laboratory)	5
Mechanical Laboratory 2	1½
Hydraulics 3	1
Shop-work 12 (Construction and Pattern Work)	2
Steam Engineering 5 (Steam Engine Design) (optional)	5
Machine Design 6 (Machine Elements, Transmission of Power) (optional)	5
Elective, including thesis	6½

Inspection tour through industrial establishments.

Either Steam Engineering 5, or Machine Design 5, must be taken, and it is recommended that the class work of the study not taken be elected in addition The study selected must be taken for the entire year.

SECOND SEMESTER.

Contracts and Specifications	1
Alternating Currents 2, 7 (Elementary Applied)	5
Steam Engineering 5 (Steam Engine Design) (optional)	5
Machine Design (Machine Elements, Transmission of Power) (optional)	5

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	Hrs. per W'k.
From Machine Design 5, 6, 10, Steam Engineering 8, 9, 11, 12, Mechanical Laboratory, and Shop-work 11, 13	5
Thesis and Elective	5
Mechanical Laboratory 2	1

ELECTRICAL ENGINEERING COURSE.

Sophomore Year.

FIRST SEMESTER.

French 7, German 3E, or Spanish 4 (Technical Reading)	3
Mathematics 104 (Analytical Geometry and Calculus)	5
Physics 101	5
*Chemistry 12, or Shop-work 3, 5, 6	3
Machine Design 1 (Kinematics)	4

*Students who elect chemistry will take shop-work 5, 6, 7, 8 in the junior year.

SECOND SEMESTER.

Mathematics 104 (Calculus)	5
Physics 101	5
Chemistry 12, or Shop-work 7, 8	2
Mechanics 1a, 1b	5
Mechanical Drawing 3 (Descriptive Geometry)	3

Junior Year.

FIRST SEMESTER.

Mechanics 3a, 3b	5
Hydraulics 1	2
Physics 104 (Precision of Measurements)	2½
Applied Electro-Magnetism 1 (Electro Magnets and Dynamos)	3
Steam Engineering 6 (Thermodynamics)	2
Machine Design 2	5
Shop-work 9 (General Machine Work)	2

SECOND SEMESTER.

Hydraulics 2	2
Steam Engineering 6 (Thermodynamics)	2
Mechanical Laboratory 1, 2	1½

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	Hrs. per W'k.
Applied Electro-Magnetism 1, 2 (Electro-Magnets and Dynamos)	5
Electrical Installations 2 (Electrical Testing)	3
Materials of Construction 1	3
Shop-work 10 (General Machine-work)	2
Elective in Civil and Mechanical Engineering	2 or 3

Senior Year.

FIRST SEMESTER.

Alternating Currents 1, 2	5
Applied Electro-Magnetism 1, 2 (Designing and Testing Direct Current Dynamos)	2
Mechanical Laboratory 2	1½
Materials of Construction 2 (Testing Laboratory)	1½
Elect from: Electrical Installations 3, 5, 7, 8, 10, and Applied Electrochemistry 1, Railway Engineering 4	7
Thesis and Elective	3

Inspection tour through industrial establishments.

SECOND SEMESTER.

Alternating Currents 1, 2	3
Elect from: Electrical Installations 3, 4, 5, 6, 8, Alternating Currents 3, 4, Applied Electrochemistry 2	10
Contracts and Specifications	1
Hydraulics 3 (Laboratory)	1
Thesis and Elective	5

Graduate Courses.

Graduates and advanced students are offered instruction in advanced theory, design, and experimental investigations relating to electrical engineering and applied electrochemistry, as is more fully explained in later pages under Departments of Instruction and also under the Graduate School, page 348.

APPLIED ELECTROCHEMISTRY COURSE.

Sophomore Year.

FIRST SEMESTER.

Mathematics 103, 104 (Analytical Geometry, Calculus)	5
Physics 101	5

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	Hrs. per W'k.
Machine Design 1 (Kinematics)	3
Shop-work 3, 5 or 3, 6	2
French 7, German 3E, or Spanish 4	3
Chemistry 12	2

SECOND SEMESTER.

Mathematics 104	5
Physics 101	5
Mechanics 1	5
Shop-work 7	1
Chemistry 12	2
Mechanical Drawing 3 (Descriptive Geometry)	3

Junior Year.

FIRST SEMESTER.

Mechanics 3	5
Physics 104 (Precision of Measurements)	2½
Applied Electro-Magnetism 1, 2 (Electro-Magnets and Dynamos)	3
Chemistry 13	5
Chemistry 31 (Electrochemistry)	5

SECOND SEMESTER.

Applied Electro-Magnetism 1, 2 (Electro-Magnets and Dynamos)	5
Materials of Construction 1	3
Chemistry 4	5
Chemistry 31 (Electrochemistry)	5
Elective	3

Senior Year.

FIRST SEMESTER.

Applied Electrochemistry 1	5
Alternating Currents 1, 2	5
Chemistry 20	5
Steam Engineering 7	2
Mechanical Laboratory 3	1
Materials of Construction 2 (Testing Laboratory)	1½
Thesis and Elective in Mineralogy, Structures, etc	2
Inspection tour through industrial establishments.	

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SECOND SEMESTER.

	Hrs. per W'k.
Alternating Currents 1, 2	3
Electrical Installations 4 (Electric Lighting and Power)	3
Applied Electrochemistry 2	5
Applied Electrochemistry 5	2
From Electrical Installations 6, 8, 10, and Alternating Currents 3, 4	4
Contracts and Specifications	1
Thesis and Elective	4

Graduate Courses.

See page 244.

GENERAL ENGINEERING COURSE.

There is a strong demand in various industrial and commercial lines for technically educated men who cannot be classified as engineers, properly speaking. Superintendents and managers, presidents and secretaries, owners and members of boards of directors, of all large manufacturing and commercial enterprises, as well as of all transportation, lighting, and power companies, should be acquainted with the fundamental principles and practices of some of the ordinary applications of science to modern industry. For the practical education of such men a General Engineering Course has been established, with only the fundamental engineering sciences required, in addition to the regular work of the freshman year. This leaves about one-third of the entire time to be filled by such elective studies in the College of Engineering, or in other departments, as the student may find best suited to his particular needs. It may well be also that some students who expect to practice engineering will prefer to elect a considerable portion of their course in place of taking any one of the fixed engineering courses.

The subjects given below are the ones which are required, though some variation will here be allowed. Elective studies must be arranged to secure continuity of work and must be approved by the student adviser. At least 15 hours per week must be taken of the studies listed in the Departments of Instruction in the College of Engineering, page 244. Studies taken in excess of the minimum requirement cannot be counted to shorten the time required for the course.

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Freshman Year.

All the studies of this year are required, and are the same as in the other engineering courses.

Sophomore Year.

FIRST SEMESTER.

	Hrs. per W'k.
Mathematics 105 (Analytical Geometry and Calculus)	5
Physics 101	5
Mechanical Drawing 3 (Descriptive Geometry)	3
Elective (History, 3 hours recommended)	5 to 8

SECOND SEMESTER.

Mathematics 105 (Calculus)	3½
Physics 101	5
Mechanics	5
Elective (Economics 1, 3 hours recommended)	5 to 8

Junior Year.

FIRST SEMESTER.

Mechanics 3	5
Steam Engineering 7	2
Mechanical Laboratory 2	1
Hydraulics 1, 3	3
Elective	7 to 10

SECOND SEMESTER.

Materials of Construction 1, 2	4½
Machine Design 8	3
Elective	9 to 12

Senior Year.

FIRST SEMESTER.

Applied Electro-Magnetism 2 and 3	5
Elective	13 to 16

SECOND SEMESTER.

Thesis and Elective	18 to 21

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MINING ENGINEERING GROUP OF ELECTIVES.

Students who take the General Engineering Course may group their electives in chemistry, mineralogy, and geology in such a way as to prepare them for mining engineering. The arrangement of these electives, together with such other studies as are most desirable in a mining course, is as follows:

Sophomore Year.

FIRST SEMESTER.

	Hrs. per W'k.
Chemistry 12, 13	5
Topographical Engineering 3	3½

SECOND SEMESTER.

Chemistry 12, 13	5
Topographical Engineering 9, 10	4

Junior Year.

FIRST SEMESTER.

Mineralogy 6	5
Geology 1	5

SECOND SEMESTER.

Mineralogy 6	5
Geology 2, 3	5
Structural Engineering 2	2

Senior Year.

FIRST SEMESTER.

Railway Engineering 1	4
Machine Design 3	2
Geology 11 and one of courses 14 to 18	6
Mineralogy 8	3

SECOND SEMESTER.

Railway Engineering 7	2
Structural Engineering 9	3
Geology 11, 12 and one of courses 14 to 18	6
Petrology 9, 10	5

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The course of study here outlined is arranged with special reference to the needs of those who expect to work in the Lake Superior region.

The professors in the department of Geology, in the College of Letters and Science, have for many years been engaged in the investigation of the mining resources of the Northwest for the United States Geological Survey, and they offer training for mining work in this field, and especially in the iron ores, which is surpassed in no other institution. Students who continue work in geology in a graduate course may qualify themselves for work in mining geology (as distinguished from technical mining engineering), judging ore districts and ore deposits, directing exploration and mining development, and better qualifying themselves for mine superintendency.

If desired, students taking the mining group will usually be able to obtain their degree in mining engineering at a mining school in one additional year.

A five-year course for civil engineering students offering larger options in mining geology and similar elections along any line of geological work, and leading to the degree of *Bachelor of Science, Civil Engineering Course*, is outlined below. This is a more desirable course than the one given above.

FIVE AND SIX-YEAR COURSES.

COURSE IN CIVIL ENGINEERING.

Leads to the degree of *B. S., Civil Engineering Course*, at the end of five years, and the degree of *C. E.* at the end of six years.

First Year.

FIRST AND SECOND SEMESTERS.

	Hrs. per W'k.
Mathematics 101, 102, 103	5
German 2E, French 3, or Spanish 3	4
Chemistry 2	3
English 1	3
Elective	3

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Second Year.

FIRST AND SECOND SEMESTERS.

	Hrs. per W'k.
Mathematics 105	5
Physics 101	5
Mechanical Drawing 1 and 2	3
Elective	5

Third Year.

FIRST SEMESTER.

Mechanics 1a and 1b	5
Topographical Engineering 2 and 3	4
Mechanical Drawing 3	3
Steam Engineering 7	2
Elective	4 to 6

SECOND SEMESTER.

Mechanics 3a and 3b	5
Topographical Engineering 1 and 4	4
Structural Engineering 2, 3, 4a	4
Mechanical Laboratory	1
Elective	4 to 6

Fourth Year.

FIRST SEMESTER.

Hydraulic Engineering 1, 3	3
Materials of Construction 1	3
Railway Engineering 1	5
Structural Engineering 1, 4b	5
Elective	5

SECOND SEMESTER.

Hydraulic Engineering	2
Materials of Construction 2	1½
Structural Engineering 5a, 7a	6
Railway Engineering 3	2
Topographical Engineering 5	2
or Astronomy	4
Elective	5 to 7

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Fifth Year.

FIRST SEMESTER.

	Hrs. per W'k.
Structural Engineering 6, 7b	4
Railway Engineering 5	2
Hydraulic Engineering 11	3
Elective in Engineering	5
Thesis and Elective	6

SECOND SEMESTER.

Hydraulic Engineering 12	3
Roads and Pavements	2
Railway Engineering 7	1½
Rivers and Canals	1½
Engineering Contracts and Specifications	1
Elective in Engineering	5
Thesis and Elective	6

Sixth Year.

Sixth year work will be arranged for as graduate work.

The thesis for the baccalaureate degree may be written in any department of the University, subject to the approval of the Engineering faculty.

Courses in Mechanical and Electrical Engineering, and in Applied Electrochemistry, similar to the foregoing course in Civil Engineering have been arranged in which the special work of the respective course replaces the Civil Engineering studies here given. Detailed statements of these courses, together with full information regarding the various departments, are contained in the special announcement of the College of Engineering, which may be had by addressing the Dean of the College.

COMBINATION ENGINEERING AND COMMERCE COURSE.

By electing the following group of studies in Economics, students pursuing the five-year course may get all the essential studies of the Course in Commerce, together with a full Engineering course.

First Year: Physiography and Physical Geography, 3 hours.

Second Year: Elementary Economics, 3 hours for one semester; Commercial Geography 3 hours for one year.

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Third Year: Money and Banking and Transportation 3 hours; Commercial Law 3 hours.

Fourth Year: Group in Banking and Finance, Transportation, or the Manufacturing Industries, 3 hours; Business Administration 2 hours.

Fifth Year: Business Administration 2 hours; Group and Thesis 4 hours (if the thesis is taken in Commerce).

ELECTIVE GROUP IN GEOLOGY.

For Civil Engineering students desiring to enter mining or geological work, the following group of studies is suggested:

Third Year: Mineralogy, 5 hours.

Fourth Year: General Geology, 5 hours.

Fifth Year: Economics, Structural or Metaphoric Geology, 5 hours. To be selected from Geology: Courses 11, 12, 14, 15, 16, 17. Elective work in Advanced Geology, 5 hours.

Students selecting this group should take Surveying in their second year.

Elections for Students in the College of Letters and Science.

Students who plan to graduate in engineering, after taking a degree in the College of Letters and Science, should aim to make the following elections during their undergraduate course, in order that the engineering course may be completed in two additional years:

Mathematics 101 to 105; Physics 101; Chemistry 2; Mechanical Drawing 1, 2, and 3; Topographical Engineering 2, 3, and 4, or Machine Design 1; Applied Mechanics 1.

It is well also to elect some or all of the freshmen and sophomore shop work, as an extra study.

Graduation in More Than One of the Engineering Courses.

Graduates in any of the engineering courses may graduate in any other engineering course after one year of additional study. Students who contemplate doing this should, however, make their elections, especially in the senior year, with this end in view.

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DEPARTMENTS OF INSTRUCTION.

The unit of reckoning is one hour of class-room work per week, making a one-fifth study. Two hours of draughting, laboratory, field, or shop work (which require no outside preparation) count as one hour of recitation.

ENGLISH.

ASSOCIATE PROFESSOR LATHROP, DR. BEATTY, MR. COOK, MR. DICKINSON, MR. ADAMS, MR. GENTNER, AND MR. NORTHROP.

1. Freshman English. English Prose Style. Composition. *Three hours a week throughout the year.* For hours and rooms see time table of required studies. Required of freshmen in all courses.

GERMAN.

DR. MEISNEST, DR. HANDSCHIN, MR. GOODNIGHT, MR. HAUSSMANN, AND MR. HAERTEL.

2E. *First semester:* Review of Grammar. Narrative and historical prose.

Second semester: One drama and introductory scientific prose. *Four times a week at* 8, 9, 2, *and* 3. Four sections. Required of freshmen, unless French or Spanish is elected.

3E. Advanced scientific prose and current engineering literature. *First or second semester; three times a week at* 8 *and* 12. Two sections. For Sophomores.

FRENCH.

MR. MACNISH, MR. SCHLATTER, AND MR. BOARDMAN.

3. Special Elementary Course for Engineers, essentially as follows: *Roman d'un Jeune Homme Pauvre, La Petite Fadette, Le Cid, Le Misanthrope. Throughout the year; Tu., W., Th., F., at* 8, Mr. BOARDMAN; *Tu., W., Th., F., at* 2, Mr. SCHLATTER; *M., Tu., W., Th., at* 9, Mr. MACNISH.

7. Scientific French for Engineers. Continuation of course 3. Herdler's *Scientific Reader*, Luquien's *Popular Science*, and other scientific prose. *First semester; W., Th., at* 12. Mr. MACNISH.

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Any of the other courses in French are open to properly qualified students of the College of Engineering.

SPANISH.

MR. SEYMOUR AND MR. SCHLATTER.

3. Elementary. Giese's *First Spanish Book. Throughout the year; M., Tu., W., Th., at* 9 *and* 12, Mr. SEYMOUR; *M., Tu., W., Th., at* 12. Mr. SCHLATTER.
4. Conversation, Composition, and Reading. *Throughout the year as a two-fifths, or one semester as a three-fifths study.* Mr. SEYMOUR.

Courses 5 and 6 (see p. 140) are also open to engineering students.

MATHEMATICS.

PROFESSOR SLICHTER, ASSISTANT PROFESSOR SKINNER, MR. WOLFF, MR. PERSONS, MR. SUTER, AND MR. RANUM.

101. Algebra. *First semester; M., Tu., W., Th., F., five sections at* 8 *and four sections at* 9 (90 *hours in class-room*).
Required of freshmen in engineering.
102. Plane Trigonometry. *Part of second semester; M., Tu., W., Th., F., at* 8 *and* 9 (36 *hours in class-room*).
Required of freshmen in engineering.
103. Analytical Geometry. *Part of second semester; M., Tu., W., Th., F., at* 8 *and* 9 (54 *hours in class-room*).
Required of freshmen in engineering.
104. Calculus and Analytical Geometry. For all courses except Civil Engineering. *Throughout the year; M., Tu., W., Th., F., seven sections at* 10 *and* 11 (180 *hours in class-room*).
105. Calculus. For the Civil Engineering Course. *First semester and part of second semester; M., Tu., W., Th., at* 10 *and* 11 (166 *hours in class-room*).

PHYSICS.

MR. TAYLOR, MR. COLTON, MR. MILLER, MR. TERRY, MR. BISHOP, MR. ANDERSON, MR. WORTHING, MR. ANGELL, MR. WETZEL, AND MR. INGERSOLL.

101. General Lectures and Introductory Laboratory Practice. Re-

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quired of sophomores in engineering. *Throughout the year. Lectures, M., Th., at* 4. Mr. TAYLOR. *Two recitations in sections, at hours to be assigned.* Mr. TAYLOR, Mr. TERRY, Mr. COLTON, and Mr. INGERSOLL. *Two laboratory periods a week.* Mr. MILLER.

104. Laboratory Course in Electrical and Magnetic Measurements. Testing and calibration of electrical instruments, and determination of constants. Required of juniors in Electrical engineering. *Two and one-half hours a week. First semester;* Mr. TAYLOR and Mr. TERRY.

105. Advanced Electrical Measurements. Elective for those who have had course 104 or its equivalent. The determination of self-inductance, mutual inductance, capacity, etc., by the most recent methods. *Hours and credit to be arranged.* Mr. TAYLOR and Mr. TERRY.

CHEMISTRY.

PROFESSOR DANIELLS, PROFESSOR KAHLENBERG, ASSOCIATE PROFESSOR LENHER, ASSISTANT PROFESSOR HILLYER, AND ASSISTANTS.

2. General Chemistry. For freshmen in the College of Engineering. *Three-fifths study. Two lectures, one recitation, and one three-hour laboratory period a week throughout the year.* Associate Professor LENHER and assistants.

4. Chemical Preparations. Laboratory course in the preparation of typical inorganic compounds. Associate Professor LENHER.

12. Analytical Chemistry. For sophomore engineers. *Two-fifths study. First semester:* Qualitative analysis. *Second semester:* Quantitative analysis. Professor DANIELLS and Mr. HUTCHINS.

13. Quantitative Chemical Analysis. For junior engineers. Continuation of course 12. The analysis of metals, ores, minerals, and economic products. *Three-fifths study throughout the year.* Professor DANIELLS and Mr. HUTCHINS.

14. Water Analysis. For students in sanitary engineering. *Second semester; five-fifths study.* Professor DANIELLS.

20. Organic Chemistry. *First semester; five-fifths study.* Work of a similar character may be continued in the second semester. Required of seniors in applied electrochemistry. Assistant Professor HILLYER.

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24. Electrolysis and Electrosynthesis of Organic Compounds. Conferences once a week, with laboratory work. *Second semester; three-fifths study.* Assistant Professor HILLYER.

30. Physical Chemistry. The lectures and recitations are supplemented by laboratory exercises in physicochemical measurements, thus making a full study. This course must be preceded by Chemistry 1. *Five-fifths study throughout the year. Lectures and recitations, first semester; Tu., Th., at* 8. *Second semester; W., F., at* 8. Professor KAHLENBERG and Mr. SHINN.

31. Electrochemistry. Lectures and recitations. Laboratory work in electrochemical measurements and in electrolysis of various chemical compounds supplements the lectures, and with them makes a *five-fifths study. Throughout the year. Lectures during the first semester; W., F., at* 8. Professor KAHLENBERG and Mr. SHINN.

32. Thermal Chemistry. *Lectures M., at* 8, *and one three-hour laboratory period a week. Second semester.* Professor KAHLENBERG.

33. Physical Chemistry. Special laboratory course. This course is for seniors in engineering who desire an acquaintance with the methods of physico-chemical measurement. *First semester; hours to be arranged.* Professor KAHLENBERG.

35. Advanced Physical Chemistry. Lectures on selected topics. *Second semester; Th., at* 8. In 1905 the lectures will be on the subject of photochemistry. Professor KAHLENBERG.

36. Advanced Electrochemistry. A course in the preparation of chemical compounds by means of electrolysis and the electric furnace. *Full study throughout the year.* Weekly conferences accompany the laboratory work. *Hours to be arranged.* Professor KAHLENBERG and Mr. SHINN.

37. Research Work in Physical Chemistry. *Daily throughout the year; hours to be arranged.* Professor KAHLENBERG.

50. Assaying. A course in practical assaying. *Second semester; hours to be arranged.* Associate Professor LENHER and Mr. TIBBALLS.

70. The Chemistry of Gas Manufacture. Lectures and reports. Primarily for junior and senior engineers. *Two-fifths credit. First semester; Tu., Th., at* 12. Dr. PATTEN.

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ASTRONOMY.

PROFESSOR COMSTOCK.

6. Astronomical Practice. Theory and use of the simpler instruments used in astronomical and geodetic field work. Determination of time, latitude, and the direction of the meridian, together with drill in numerical computations. *Second semester; M., Tu., W., Th., 2 to 4.*

   Elective for juniors in Civil, Sanitary, and General Engineering.

7. Advanced Field Astronomy. Spherical astronomy, the method of least squares, theory and practice of the more refined methods for the determination of time, latitude, and azimuth. *Two hours a week throughout the year.*

   Open to election by students who have completed course 6.

GEOLOGY AND MINERALOGY.

PROFESSORS HOBBS, LEITH, AND FENNEMAN, AND MR. HOTCHKISS AND MR. SMITH.

1. General Geology. *First semester; M., Tu., W., Th., F., at* 12. Professor FENNEMAN.
2. Historical Geology. *Five-fifths; first half of second semester, at* 12. Professor FENNEMAN.
3. Field Geology. *Five-fifths; last half of second semester; F., 2 to 6, Sat., 9 to 1 and 2 to 6.* Professor FENNEMAN.
4. Physical Geography. *First semester; M., W., Th., at* 10. Professor FENNEMAN and Mr. HOTCHKISS.
5. Physiography of the United States. *Second semester; M., W., Th., at* 10. Professor FENNEMAN and Mr. HOTCHKISS.
6. General Course in Mineralogy. *First semester; M., Tu., W., Th., F., at* 11. *Second semester; M., Tu., W., Th., F., (a) at* 11, *(b) after Easter, at* 11 *to* 1. Professor HOBBS.
7. Short Course in Mineralogy. Required of civil engineers in the sophomore year. *First semester; Tu., F., 2 to 4.* Professor HOBBS.
8. Optical Mineralogy. *First semester; M., W., F., 9 to* 11. Professor HOBBS and Mr. HOTCHKISS.
9. Field Petrology. *Second semester; Tu., Th., 9 to* 11. Professor HOBBS.

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10. Microscopic Petrology. *Second semester; M., W., F., 9 to 11.* Professor HOBBS.
11. Economic Geology (Metallic). *Three-fifths study; first semester and first half of second semester.* Professor LEITH.
12. Economic Geology (Non-metallic). *Three-fifths study; second half of second semester, to follow course* 11. Professor LEITH.
13. Introductory Paleontology. *Second semester; three-fifths study.* Mr. SMITH.
14. Principles of Structural Geology. *Three-fifths study throughout the year.* Professor LEITH.
15. Principles of Metamorphism. Application to the deposition of ores. *Three-fifths study throughout the year.* Professor LEITH.
16. Metamorphic Rocks. Laboratory work, supplementary to course 15. *Two-fifths study throughout the year.* Professor LEITH and Mr. HOTCHKISS.
17. Principles of pre-Cambrian Geology. *Three-fifths study throughout the year.* Professor LEITH.
18. Lake Superior Geology. *Three-fifths study throughout the year.* Professor LEITH.
19. Advanced Petrology. *Credit given on work done.* Professor HOBBS.
20. Advanced Crystallography. *Hours to be arranged.* Professor HOBBS.
21. Areal Physiography. *Credit given for work done.* Professor FENNEMAN.
22. Research Work for Graduates. A full or double study running through the year, as desired by individual students.
23. Geological Seminary. *One hour a week.*

BIOLOGY OF WATER SUPPLIES.

ASSISTANT PROFESSOR FROST.

8. Biology of Water Supplies. Lectures and laboratory work. Adapted to the needs of students in Sanitary Engineering. *First semester; full study.* Assistant Professor FROST. Required of juniors in Sanitary Engineering.

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MECHANICAL DRAWING.

ASSISTANT PROFESSOR PHILLIPS, MR. MILLAR, MR. KINNE, AND MR. VAN HAGEN.

1. Elements of Drawing. Geometrical constructions; orthographic, isometric, and cabinet projections; freehand lettering and sketching. Tracy's *Mechanical Drawing. First semester; one lecture, one recitation, and one two-hour drawing period weekly; three-fifths credit.* Assistant Professor PHILLIPS, Mr. KINNE, and Mr. VAN HAGEN.
   Required of freshmen in engineering.
2. Elements of Drawing. Sections and intersections; freehand lettering; shades, shadows, and perspective. Tracy's *Mechanical Drawing. Second semester; one lecture, one recitation, and one two-hour drawing period weekly; three-fifths credit.* Assistant Professor PHILLIPS, Mr. KINNE, and Mr. VAN HAGEN.
   Required of freshmen in engineering.
3. Descriptive Geometry. Problems relating to the point, line, and plane. The generation and classification of lines and surfaces; planes tangent to surfaces of single and double curvature; intersections, developments, and revolutions. Churchs' *Descriptive Geometry. First semester* for students in Civil and Mechanical Engineering. *Second semester* for students in Electrical Engineering. *One lecture, two recitations, and one three-hour drawing period weekly; three-fifths credit.* Assistant Professor PHILLIPS, Mr. MILLAR, Mr. VAN HAGEN, and Mr. KINNE.
   Required of sophomores in engineering.
4. Freehand Lettering. A continuation of the lettering work in courses 1 and 2. *First semester; two one-hour periods weekly; one-fifth credit.* Mr. KINNE.
   Elective for engineering students.
5. Sketching. In perspective. Architectural, bridge, and machine details. *Second semester; one two-hour period weekly; two-fifths credit.* Mr. VAN HAGEN.
   Elective for engineering students.
6. Mechanical Lettering. Roman and Gothic styles. *Second semester; one two-hour period weekly; two-fifths credit.* Mr. KINNE.
   Elective for engineering students.

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7. Finished Drawings. Drawings finished in line and color. Preparation of drawings for zinc etching process. *First semester; one two-hour period weekly; two-fifths credit.* Mr. KINNE.

Elective for engineering students.

THE MATERIALS OF CONSTRUCTION.

PROFESSOR TURNEAURE, PROFESSOR RICHTER, MR. MOORE AND MR. HUELS.

1. The Materials of Construction. A review of the principles of mechanics applicable to the strength of materials at rupture, the methods of manufacture, the methods of testing, and the physical properties of the materials of engineering construction. *Three hours a week; repeated each semester.* Professor TURNEAURE.

Required of all juniors in engineering.

2. Testing of Materials of Construction. Each student is required to make a definite series of tests of structural materials. *First semester; three hours a week.* Required of seniors in Mechanical Engineering and juniors in Civil Engineering. *Second semester; three hours a week.* Required of seniors in Electrical Engineering and juniors in Civil Engineering. Professor RICHTER, Mr. MOORE, and Mr. HUELS.

3. Laboratory Investigations. An advanced course will be offered, the special line of work to be agreed upon after consultation with the professors in charge. *M., W., hours to be assigned.* Professor RICHTER and Mr. MOORE.

Open to graduate students, and to those students who have completed course 2.

APPLIED MECHANICS.

PROFESSOR MAURER, ASSISTANT PROFESSOR BURNSIDE, MR. STEWART, AND MR. MOORE.

1a. Statics. Treated, as are all the following courses, with special reference to the requirements of engineers. *First ten weeks of the second semester; M., Tu., W., Th., F., at* 10 *or* 11.

1b. Strength of Materials. Mechanical theory of the subject

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mainly. *Last eight weeks of the second semester; M., Tu., W., Th., F., at* 10 *or* 11.

Required of sophomores in engineering.

2. Graphic Statics. Co-ordinated with course 1a. Consists mainly of draughting. *First semester; four hours a week.* Assistant Professor BURNSIDE.

Required of juniors in Civil Engineering.

3a. Strength of Materials. Continuation of course 1b. *First eight weeks of the first semester; M., Tu., W., Th., F., at* 10 *or* 11.

3b. Dynamics. Relates principally to rigid bodies. *Last ten weeks of the first semester; M., Tu., W., Th., F., at* 10 *or* 11.

Required of Juniors in engineering.

4. Advanced Mechanics. A course supplementary to the Statics and Dynamics required of engineers. *First semester; two hours a week.* Assistant Professor BURNSIDE.

5. Advanced Mechanics of Materials. An elaboration of the required course in this subject. *Second semester; two hours a week.* Professor MAURER.

6. Elements of Mechanics. Involving no calculus; algebra and trigonometry are prerequisites. A general course, with emphasis on topics of special interest to the class. *First semester; three times a week.* Professor MAURER.

TOPOGRAPHIC AND GEODETIC ENGINEERING.

ASSISTANT PROFESSOR SMITH AND MR. M'CULLOUGH.

1. Topographic Drawing and Mapping. *Throughout the year; 64 hours in draughting room. One-fifth credit.*

Required of sophomores in civil and sanitary engineering.

2. Elementary Surveying. Johnson's *Surveying* and Smith's *Field Manual. Throughout the year; first nine weeks of first semester and last half of second semester; one-fifth credit.*

Required of freshmen in Civil and Sanitary Engineering for one semester.

3. Elementary Surveying. A continuation of course 2, and includes the field and office work of a variety of practical problems in the use of the engineer's transit and level. (Special emphasis is placed on methods of computation and arrangement of data.) *First semester; recitations two*

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hours a week; field work first nine weeks, 72 hours; four-fifths credit.

Required of sophomores in Civil and Sanitary Engineering.

4. Advanced Surveying. A continuation of course 3, and includes a study of the higher instruments of precision, and their use in topographic and hydrographic survey. *Second semester; recitations two hours a week, first thirteen weeks; field work, 56 hours, last eight weeks; three-fifths credit.*

Required of sophomores in Civil and Sanitary Engineering.

5. Elementary Geodesy. Text: Johnson's *Surveying. Second semester; M., W.; two-fifths credit.*

Elective for juniors in Civil and Sanitary Engineering.

6. Trigonometrical Survey. Field work for illustrating course 5. Each year a portion of the region in the vicinity of Portage, Wisconsin, will be covered by an accurate triangulation, and also by a topographic and hydrographic survey. Survey begins the Monday of Commencement week, and continues for two weeks (120 hours). Professor SMITH, Mr. MCCULLOUGH, and Mr. WILLIAMS.

Required of juniors in Civil and Sanitary Engineering.

7. Advanced Geodesy. Lectures, assigned readings, field work. Wright's *Adjustment of Observations. First semester; two hours a week.*

Elective for seniors in Civil Engineering and for graduates who have taken courses 2, 3, 4, and 5, or their equivalents.

8. Short Course in Surveying. Planned to meet the demands of Mechanical Engineering and Electrical Engineering students for a general study of the subject, including the use of both transit and level. *First semester; three-fifths credit.* Elective.

9. Rapid Topography. Adapted for training topographers for the United States Geological Survey.

Elective for seniors in Civil Engineering, and for others who have had courses 2 and 3.

10. Mining Surveying. Field and office work for an underground survey. *Second semester; field work, 60 hours.*

Elective for students who have had Topographic Engineering 2 and 3.

11. City Surveying, Topographic and Cadastal. Lectures, assigned readings, and field work. *Two hours a week.*

Elective for juniors or seniors in Sanitary Engineering.

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RAILWAY ENGINEERING.

PROFESSOR TAYLOR AND MR. WILLIAMS.

1. Railway Construction. The theory of field and office work necessary to survey and construct a new railway line, and to improve or reconstruct an old one. *First semester; full study; class-room, twice a week.* Lectures, Professor TAYLOR.
2. Practice in Field and Office Work. In connection with course 1. 108 *hours field and office work.* Mr. WILLIAMS.
3. Maintenance of Way, Train Control and Railway Signalling. *Second semester; Tu., Th., at* 11; 32 *hours in class-room.* Professor TAYLOR.

   Required of juniors in Civil and Sanitary Engineering.
4. Railway Engineering. A short course in the above subjects, especially adapted to city and interurban railways, is offered as an elective to those who have had course 2 in Topographical Engineering. *First semester;* 18 *hours in class-room and* 36 *hours in the field and office.* Professor TAYLOR.
5. Railway Economics. A study of the history of railway development, railway geography, railway operation, and the economics of railway construction and improvement. *First semester;* 36 *hours in class-room.* Professor TAYLOR.

   Required of seniors in Civil Engineering.
6. Railway Standards. Continuation of course 3. It is intended to give the student some degree of familiarity with designing various railway standards. *Twice a week in either semester.* Mr. WILLIAMS.

   Elective for juniors and seniors in Civil and Sanitary Engineering.
7. Tunneling and Substructures. The various methods of tunneling, shaft sinking, ordinary and deep foundation work. *Last half of second semester; M., W., F., at* 9; 24 *hours in class-room.* Professor TAYLOR.

   Required of seniors in Civil Engineering.
9. Economic Study of the organization, construction, traffic, and operation of the great American systems. *Second semester; three hours a week.* Professor TAYLOR.

   For course in railway transportation, see courses 35 under the head Political Economy, which is offered as an elective to seniors and graduates in Civil Engineering.

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RIVERS AND CANALS.

PROFESSOR TAYLOR.

1. River and Harbor Improvement and Canal Construction. *Second semester; M., W., F., at* 11 *for the first half of the semester;* 24 *hours in class-room.*
Required of seniors in Civil Engineering.

ROADS AND PAVEMENTS.

ASSISTANT PROFESSOR SMITH.

1. Location and Construction of Highways and City Streets. *Second semester; Tu., Th., at* 11.
Required of seniors in Civil and Sanitary Engineering.

HYDRAULIC AND SANITARY ENGINEERING.

PROFESSOR MEAD, PROFESSOR BULL, AND MR. STEWART.

1. Hydraulics. Hydrostatics and the flow of water over weirs, and through orifices, pipes and open channels. *One semester; two hours a week.* Mr. STEWART.
Required of juniors in engineering.
2. Hydraulic Motors and Pumping Machinery. *Eleven weeks during second semester* (45 *hours in class-room*). *M., Tu., W., Th., at* 8. Professor BULL.
Required of juniors in mechanical and electrical engineering.
3. Hydraulic Laboratory. 36 *hours in laboratory.* Professor MEAD and Mr. STEWART.
Required of juniors in civil engineering and of seniors in Mechanical and Electrical Engineering.
4. Laboratory Investigations. Advanced work in the hydraulic laboratory. Professor MEAD.
11. Water Supply Engineering. *First semester; three times a week.* Professor MEAD.
Required of seniors in Civil and Sanitary Engineering.
12. Sanitary Engineering. Sewerage and sewage disposal works. *Second semester; three times a week.* Professor MEAD.
Required of seniors in Civil and Sanitary Engineering.
13. Designs of Water Supply and Sewerage Systems. Complete designs and estimates of water supply and sewerage sys-

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tems and purification plants. *First and second semesters; four hours' draughting a week.* Professor MEAD.

Required of seniors in Sanitary Engineering; elective for others.

STRUCTURAL ENGINEERING.

PROFESSOR TURNEAURE, MR. WILLIAMS, AND MR. PRICE.

1. Structural Details. The designing of simple forms of members and of joints in wood and iron, and of wooden roof and bridge trusses. *First semester; draughting four hours a week.* Mr. PRICE.

   Required of juniors in Civil Engineering.

2. Masonry Construction. Theory governing the design of masonry structures and foundations. *Second semester;* 36 *hours in class-room.* Mr. WILLIAMS.

   Required of juniors in Civil and Sanitary Engineering.

3. Engineering Architecture. Treats of those principles of artistic design applicable to engineering structures, especially those of masonry. *Second semester; four lectures in connection with course* 4. Mr. WILLIAMS.

4a. Masonry Arches. A discussion of the theory of the stability of masonry arches, followed by the complete design of an arch with specifications and estimates of cost. *Second semester; two-fifths study.* Mr. WILLIAMS.

   Required of juniors in Civil and Sanitary Engineering.

4b. Masonry Dams and Stereotomy. A design for high masonry dam is made, followed by several problems in stereotomy. *First semester; three-fifths study.* Mr. WILLIAMS.

   Required of seniors in Civil and Sanitary Engineering.

5a. Bridge Stresses. Simple bridge trusses. *Second semester; three times a week.* Mr. PRICE.

   Required of juniors in Civil and Sanitary Engineering.

5b. Bridge Stresses. Suspension, swing, cantilever, and arch bridges. *First semester; twice a week.* Professor TURNEAURE.

   Required of seniors in Civil Engineering.

6. Bridge Design. Theoretical considerations. *First semester; once a week.* Professor TURNEAURE.

   Required of seniors in Civil and Sanitary Engineering.

7. Designs and Estimates. In this course each student makes a

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complete design of one structure of each class mentioned below, prepares detail drawings, and makes an estimate of the quantity of material and cost; complete working drawings are made of at least one structure.

7a. Roof, Trusses, and Plate Girders. *Second semester;* 96 *hours in draughting room.* Mr. PRICE.

Required of seniors in Civil and Sanitary Engineering.

7b. Riveted and Pin-Connected Trusses. *First semester;* 96 *hours in draughting room.* Mr. PRICE.

Required of seniors in Civil and Sanitary Engineering.

7c. Swing Bridges. Design of truss, turntable, and operating machinery. *Second semester;* 72 *hours in draughting room.* Professor TURNEAURE.

Elective for seniors and graduates in Civil Engineering.

8. Advanced Theory and Experimental Work. Higher structures, secondary stresses, and tests on bridges under moving loads. *Two hours a week, one or two semesters.* Professor TURNEAURE.

Open to seniors and graduates.

9. Structural Design. A short general course in the designing of roofs and buildings. *Second semester; three times a week.* Mr. PRICE.

Elective for students in Electrical and Mechanical Engineering who have had Mechanics 3.

10. Reinforced Concrete Structures. Theory and design. *Second semester; Tu., Th., at* 9. Professor TURNEAURE.

Elective for seniors.

STEAM ENGINEERING.

PROFESSOR BULL, ASSISTANT PROFESSOR THORKELSON, MR. HUELS, AND MR. M'PHERSON.

1. Thermodynamics. This course covers those principles of the mechanical theory of heat which are preliminary to the study of the various kinds of heat engines. *First semester, first ten weeks; M., Tu., W., Th., F., at* 12; 50 *hours in class-room.* Assistant Professor THORKELSON.

Required of juniors in Mechanical Engineering.

2. Theory of Heat Engines. The study is partly given by lectures; for a large part of the work Peabody's *Thermodynamics* is used. *First semester, last eight weeks; M., Tu.,*

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W., Th., F., at 12; 40 *hours in class-room.* Assistant Professor THORKELSON.

Required of juniors in Mechanical Engineering.

3. Steam Boilers. The general subject of combustion and its application to steam boilers. H. de B. Parson's *Steam Boilers.* The study is partly taught by lectures. *Second semester, last nine weeks; Tu., W., Th., F., at* 9; 36 *hours in class-room.* Assistant Professor THORKELSON.

Required of juniors in Mechanical Engineering; open to all who have had either course 1 or course 6.

4. Valve Gears of Steam Engines. Peabody's *Valve Gears for Steam Engines. Second semester, first nine weeks; Tu., W., Th., F., at* 9; 36 *hours in class-room.* Assistant Professor THORKELSON.

Required of juniors in Mechanical Engineering.

5. Design of the Steam Engine. Taught by lectures, supplemented by the work in the draughting room, where each student is required to work out a complete problem. Class work: *First semester, Tu., Th., at* 9; *second semester, Tu., Th., at* 11; 72 *hours in class-room.* Draughting: *First semester, M., W., F.,* 8 *to* 10; *second semester, M., W., F.,* 11 *to* 1; 216 *hours in draughting room.* Professor BULL.

Optional for seniors in Mechanical Engineering.

6. Short Course in Thermodynamics, the Steam Engine, and the Steam Boiler. *First and second semesters; twice a week;* 72 *hours in class-room.* Assistant Professor THORKELSON, and Mr. HUELS.

Required of juniors in Electrical Engineering.

7. Course in Steam Engineering for Civil Engineers. *First semester, first twelve weeks; three times a week;* 36 *hours.* Assistant Professor THORKELSON and Mr. MCPHERSON.

Required of juniors in Civil Engineering, and of seniors in Sanitary Engineering and Applied Electrochemistry.

8. Heating and Ventilation. *First semester; M. W., F.,* 54 *hours.* Professor BULL.

9. Gas and Gasoline Engines. Treated both from a theoretical and experimental point of view. *Second semester; three times a week;* 54 *hours in class-room.* Professor BULL.

10. Advanced Course in Steam Engineering. Lectures and assigned readings. *First and second semesters; M., W., F., at hours to be arranged.* Professor BULL.

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Open to graduate students and to those who have completed courses 1, 2, 3, 4, and 5 in Steam Engineering.

11. Compressed Air and Its Applications. *Second semester; two hours a week.* Assistant Professor THORKELSON.

Elective for all who have had a course in thermodynamics.

12. Steam Turbines. Lectures on theory and design. *First semester; twice a week.* Professor BULL.

Open to students who have had a course in thermodynamics.

MECHANICAL LABORATORY.

PROFESSOR RICHTER, MR. M'PHERSON, MR. HUELS, MR. ATWOOD, AND MR. BRADFORD.

1. Calibration of Instruments, and the determination of efficiencies of simple machines. *Second semester; three hours a week.*

Required of juniors in Mechanical and Electrical Engineering.

2. Determination of the Efficiencies and Losses occurring in the steam boiler, and steam, gas, and gasoline engines, air compressors, refrigerating plants, transmission of power, etc. *Three hours a week during the first semester of the senior year.* Required of seniors in Mechanical and Electrical Engineering. *Two hours a week during the second semester.* Required of seniors in Mechanical Engineering.

3. Abridged Course for Civil Engineers. *Three hours a week during the last twelve weeks of the first semester.*

Required of juniors in Civil Engineering, of seniors in Sanitary Engineering, and in the course of Applied Electrochemistry.

3. Advanced Laboratory Work. Advanced courses will be offered in any of the different lines of experimental work, to conform with the special line of work the student wishes to follow. Stress will be laid on original research and investigation. *Tu., Th., at hours to be assigned.*

Open to graduate students and to those who have completed the required courses in the line they wish to follow.

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MACHINE DESIGN.

PROFESSOR MACK, ASSISTANT PROFESSOR ZIMMERMAN, AND MR. MOORE.

1. Kinematics of Mechanism. The relative motions of machine parts, including belting, toothed gears, cams, chains, ratchets and linkages. *First semester*, electrical engineers; *second semester*, mechanical engineers; *one lecture, one recitation and four hours' draughting a week.* Prerequisite, Mechanical Drawing 1 and 2. Assistant Professor ZIMMERMAN and Mr. MOORE.

   Required of sophomores in Mechanical and Electrical Engineering.

2. Machine Design. A study of mathematical and empirical methods for the design of machine parts and complete machines, with a parallel draughting course conforming to the requirements of modern draughting practice. This course is a condensation of courses 3 and 4, arranged for requirements of electrical engineering students. Prerequisite, machine design 1, mechanics 1a, 1b. *First semester; one lecture, one recitation, and six hours draughting a week.* Assistant Professor ZIMMERMAN.

   Required of juniors in Electrical Engineering.

3. Elementary Machine Design. A continuation of mechanical drawing and kinematics as applied to the making of shop drawings. Problems in the determination of sizes and proportions involving empirical and elementary mathematical methods. Prerequisite, machine design 1. *First semester; one lecture, one recitation, and eight hours draughting a week.* Professor MACK.

   Required of juniors in Electrical Engineering.

4. Machine Design. Continuation of course 3. Machine elements and power transmission devices. A study of the application of the principles of mechanics to the design of machine parts. Prerequisite, mechanics 1 and 3. *Second semester; two hours in class-room and six hours' draughting a week.* Professor MACK.

   Required of juniors in Mechanical Engineering.

5. Machine Design. Continuation of course 4, and the design of complete machines of different types, including punching machinery, machine tools, special and automatic machinery. A study is made of various methods of construc-

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tion relative to cost, facilities, etc. *Throughout the year; two hours' class work and six hours' draughting a week.* Professor MACK.

Elective for seniors in Mechanical Engineering.

6. Patent Office Drawing. A course giving practice in the preparation of drawings required by the U. S. Patent Office. *One-fifth credit. Time arranged upon consultation.* Professor MACK.

Open to all who have had course 1 in Mechanical Drawing.

7. Special and Automatic Machinery. *Four hours draughting a week.* Professor MACK.

8. Kinematics and Elements of Machine Design. A general survey. Practice in making working drawings. *Throughout the year; one hour class-work and four hours' draughting a week.* Assistant Professor ZIMMERMAN.

Elective for students in General Engineering.

9. Kinematics and Machine Design. Similar to course 8, but suited to the requirements of students in civil and sanitary engineering. *Throughout the year; one hour class-work and four hours' draughting a week.* Professor MACK.

Elective for juniors and seniors in Civil and Sanitary Engineering.

APPLIED ELECTROMAGNETISM AND DYNAMO CONSTRUCTION.

ASSISTANT PROFESSOR SWENSON, ASSISTANT PROFESSOR SHUSTER, MR. WATSON, MR. ELLIOTT, MR. POST, AND MR. POTTER.

1. Electromagnets and Dynamos. A discussion of the simple forms of electromagnets; the development of the laws of magnetization by electric currents; the laws of simple magnetic circuits and the windings of electromagnets; the practical design, construction, management and testing of dynamos. *Three times a week throughout the year.* Assistant Professor SWENSON and Mr. WATSON.

Required of juniors in Electrical Engineering and in Applied Electrochemisty.

2. Testing Direct-Current Dynamos. Laboratory work with generators, motors, and accessory apparatus. *Twice a week throughout the year.* Assistant Professor SHUSTER, Mr. ELLIOT, Mr. POST, and Mr. POTTER.

Required of juniors in Electrical Engineering and Applied

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Electrochemistry during the second semester and of seniors during the first semester. Required of seniors in Mechanical Engineering during the first semester.

3. Electrical Machinery and Appliances. A short course in the theory, construction, management, and testing of direct-current generators, motors, and sundry appliances. *First semester, three times a week; second semester, twice a week.* Assistant Professor SWENSON and Mr. WATSON.

   Required of seniors in Mechanical Engineering during the first semester, and elective during the second semester.

4. Dynamo Design. Design and construction of large direct-current dynamos. This course includes the working out of complete designs. *Either a three or five-hour course throughout the year.* (Omitted in 1904-05). Assistant Professor SWENSON.

   Open to graduates and others who have had the equivalent of courses 1 (or 3) and 2.

ALTERNATING CURRENTS AND ALTERNATING-CURRENT MACHINERY.

PROFESSOR JACKSON, ASSISTANT PROFESSOR SHUSTER, MR. BRADFORD, AND MR. ELLIOTT.

1. Theory and Application of Single-Phase Alternating Currents. The theory of the generation and utilization of alternating electric currents; the design, construction, and operation of single-phase alternating-current dynamos and transformers; and methods for testing alternating-current machinery. *First semester, three times a week; second semester, once a week.* Professor JACKSON.

   Required of seniors in Electrical Engineering and Applied Electrochemistry. Elective for graduates.

2. Testing Alternating-Current Machinery and Appliances. The testing and operation in the laboratory of single-phase alternating-current generators, motors, transformers, meters, and other appliances. *Twice a week throughout the year.* Assistant Professor SHUSTER and Mr. ELLIOTT.

   Required of seniors in Electrical Engineering and Applied Electrochemistry. Elective for graduates.

3. Elementary Polyphase Currents. Following the treatment in Jackson's *Alternating Currents and Alternating-Cur-*

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rent Machinery. Second semester; twice a week. Professor JACKSON.

Open to students who have had the equivalent of courses 1 and 2.

4. Testing Polyphase Machinery and Appliances in the Laboratory. *Second semester; once a week.* Assistant Professor SHUSTER and Mr. ELLIOTT.

Open to students who are pursuing or have completed course 3.

5. Vector Theory of Alternating Currents. Open to adequately prepared students who desire to obtain a reasonably brief vector treatment of alternating currents and the properties of alternating-current circuits. *One and a half-hours a week throughout the year.* Professor JACKSON.

Open to seniors and graduates.

6. Advanced Course in Alternating Currents (including Polyphase Currents and Machinery). Lectures treating in detail the properties of alternating-current circuits and machinery, including the effects of resonance, protecting the circuits from lightning, etc. This course includes course 5, and the methods of vector algebra are used throughout the course. *Three hours a week throughout the year.* Two hours laboratory work may be elected in addition. Professor JACKSON.

Open to graduates and others with requisite preparation.

7. Elementary Applied Alternating Currents. A short course in the theory, construction, management, and testing of alternating-current machinery and appliances. *Second semester; three times a week.* Mr. BRADFORD.

Required of seniors in Mechanical Engineering. Open to all who have completed the equivalent of one semester of Applied Electromagnetism 3.

APPLIED ELECTROCHEMISTRY AND ELECTROMETALLURGY.

ASSOCIATE PROFESSOR BURGESS AND MR. NORMAN.

1. Applied Electrochemistry. Laws, principles, and theories involved in electrolytic phenomena; construction, efficiency and uses of the electrolytic cell; the electro-deposition of metals for plating, electrotyping, and refining; and

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the electro-chemical generation and storage of electrical energy. Class-room and laboratory instruction. Must be preceded by elementary courses in chemistry. *First semester; five times a week.* Associate Professor BURGESS and Mr. NORMAN.

Required of seniors in Applied Electrochemistry. Open to seniors and graduates.

2. Industrial Applications of Electrochemistry. A study of the various electrochemical anl electrothermal products and processes of technical importance. *Second semester; twice a week in class, and two or more times a week in laboratory.* Associate Professor BURGESS and Mr. NORMAN.

Required of seniors in Applied Electrochemistry. Open to students who have completed course 1.

3. Research. Lines of experimental investigation in electrochemical and electrometallurgical problems assigned by the instructors. Examination of the literature; conferences and preparation of papers for publication. *Three or more hours a week throughout the year.* Open to students who have completed courses 1 and 2 or their equivalents. Associate Professor BURGESS.

4. Electricity Applied to the Treatment of Metal Surfaces. Electrolytic principles involved in the corrosion of metals; methods for preventing corrosion, including electroplating, galvanizing and cleaning metal surfaces. *First semester; once a week.* Associate Professor BURGESS and Mr. NORMAN.

Elective for students in Civil and Mechanical Engineering.

5. Chemical Machinery and Appliances. The consideration of chemical engineering problems, machinery, and appliances used in the chemical industries. *Second semester; twice a week in class.* Laboratory work optional. Associate Professor BURGESS.

Required for seniors in Applied Electrochemistry. Elective for graduates and other students who have had courses in chemistry.

6. Electric Batteries. Storage battery construction and operation. Primary batteries of practical importance. *First semester; once a week in class and once a week in laboratory.* Associate Professor BURGESS and Mr. NORMAN.

Elective for juniors and seniors in engineering courses.

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ELECTRICAL INSTALLATIONS.

PROFESSOR JACKSON, ASSISTANT PROFESSOR SHAAD, AND MR. WATSON.

2. Telephones and Telegraphs. The construction, testing, maintenance, and operation of lines and appliances, used in telephony, telegraphy, and electric signalling. *Second semester; three times a week; one laboratory period.* Assistant Professor SHAAD and Mr. WATSON.

   Required of juniors in Electrical Engineering.

3. Electrical Testing. Laboratory practice in insulation and breakdown tests, testing insulators, calibration of instruments, etc. Study of the phenomena produced by high pressures on electric circuits. *First semester; twice a week.* Assistant Professor SHAAD.

   Open to seniors and graduates.

4. Electric Lighting and Transmission of Power. Theory and practice in the construction and operation of lines. The construction of appliances for the transmission and distribution of electrical power. *Second semester; three times a week.* Assistant Professor SHAAD.

   Open to seniors and graduates. Required of seniors in Applied Electrochemistry.

5. Graduate Conference. A conference or seminary for the detailed study of engineering problems.

   Open to seniors and graduates.

6. Electric Railways. The road-bed, rolling stock, electric circuits, and power plants. Location, construction, and operation. *Second semester; three times a week.* Assistant Professor SHAAD.

   Open to seniors and graduates.

7. Electricity in Mining and Quarrying. The practice in mining and quarrying where electrical machinery can be satisfactorily applied. *First semester; once a week.* Professor JACKSON.

   Open to seniors and graduates.

8. Central Station, Design, Management, and Estimates. *First semester, twice a week; second semester, three times a week.* Assistant Professor SHAAD.

   Open to seniors and graduates.

9. Inspection Tours. An inspection tour to large industrial centers is made during the first semester. Each student is ex-

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pected to accompany one of these parties during the last two years of his course. The tours comprise visits to Milwaukee, Chicago, Pittsburg, Niagara Falls, and other manufacturing centers, for the purpose of inspecting manufacturing plants and great engineering works under operation or construction.

10. Illumination and Photometry. The distribution and measurement of light and comparison of sources of illumination. Manufacture and use of electric lamps. *First semester; three times a week; one laboratory period.* Assistant Professor SHADD.

Open to seniors and graduates.

11. Elements of Electric Lighting and Power Distribution. A short general course particularly designed for students in civil engineering. *First semester, twice a week; second semester; four times a week.* Mr. WATSON.

Open to juniors and seniors.

ENGINEERING CONTRACTS AND SPECIFICATIONS.

PROFESSOR TAYLOR.

1. The Law of Contracts. With typical forms of specifications governing both the commercial and technical features of engineering construction, and of all the related documents pertaining to engineering contracts. *Second semester; three hours a week for six weeks.*

Required of all seniors.

SHOP WORK.

PROFESSOR KING, MR. LOTTES, MR. KRATCH, MR. ANDERSON, MR. MCINTOSH, MR. CORK, AND MR. BONN.

1. Bench Work in Wood. *Twice a week, first or second semester;* 36 *hours; one-fifth credit.*

Required of freshmen in Mechanical and Electrical Engineering.

2. Lathe, Pattern, and Foundry Work. 36 *hours; one-fifth credit.*

Required of freshmen in Mechanical and Electrical Engineering.

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3. Bench Work in Iron. *First semester;* 36 *hours; one-fifth credit.*

   Required of sophomores in Mechanical Engineering.

4. Production of Flat Surfaces and Straight Edges. Training in the use of file and scraper on surfaces of large area. *First semester;* 18 *hours.*

   Required of sophomores in Mechanical Engineering.

5. Practice on the Engine Lathe. *First semester;* 36 *hours; one-fifth credit.*

   Required of sophomores in Mechanical and Electrical Engineering.

6. Practice on the Planing and Milling Machines. 36 *hours; one-fifth credit.*

   Required of sophomores in Electrical Engineering, *first semester;* sophomores in Mechanical Engineering, *second semester.*

7. Forge Work. *First semester;* sophomore mechanical engineers, 54 *hours, one and one-half fifths credit; second semester:* sophomore electrical engineers, 36 *hours, one-fifth credit.*

8. Practice on the Lathe and Milling Machine, Gear Making and General Shop-Work. *First semester:* junior mechanical engineers, 108 *hours, three-fifths credit; second semester:* sophomore electrical engineers, 36 *hours, one-fifth credit.*

   Required of juniors in Mechanical and Electrical Engineering.

9. General Shop Practice and Machine Construction. 72 *hours; two-fifths credit.*

   Required of juniors in Electrical Engineering, *first semester;* juniors in Mechanical Engineering, *second semester.*

10. Machine Construction, General Shop Practice and Tool Making. *Second semester;* 72 *hours; two-fifths credit.*

    Required of juniors in Mechanical and Electrical Engineering.

11. Lectures on the Development of the Locomotive. 18 *hours; one-half fifth credit.*

    Elective for seniors in Mechanical Engineering.

12. Construction and Pattern Work. Practice in making lathe chucks, and fitting together machine parts. *First semester;* 72 *hours; two-fifths credit.*

    Required of seniors in Mechanical Engineering.

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13. Machine Construction. This course is similar to courses 10 and 12, but to it will be added practice in the erection of line shafting and machinery. Lectures on shop design, erection, and management will be given. *Second semester;* 36 *to* 180 *hours.*

Elective for seniors in Mechanical and Electrical Engineering.

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THE COLLEGE OF LAW.

FACULTY.

CHARLES R. VAN HISE, Ph., D., LL. D., President of the University.
HARRY S. RICHARDS, LL. D., Dean, and Professor of Law.

JAIRUS H. CARPENTER, LL. D., Jackson Professor of Law. (Emeritus.)
BURR W. JONES, A. M., LL. B., Professor of Law.
JOHN M. OLIN, A. M., LL. B., Professor of Law.
ROBERT M. BASHFORD, A. M., LL. B., Professor of Law.
HOWARD L. SMITH, A. B., LL. B., Professor of Law.
EUGENE A. GILMORE, A. B., LL. B., Professor of Law.
E. RAY STEVENS, B. L., LL. B., Lecturer in Law.
EDWIN S. MACK, A. M., LL. B., Lecturer in Law.
H. CLAUDE HORACK, Ph. B., LL. B., Instructor in Law.

History.

Plans for the organization of the College of Law were formulated in 1857, but owing to lack of funds the actual organization was not effected until 1868. The instructional staff was composed of members of the Dane County bar and the judges of the Supreme Court.

The course of study covered but one year, and no requirements as to admission were exacted. In 1874 candidates for admission were required to pass examinations in the ordinary English branches. In 1881 the course of study was extended to two years, and candidates were required to have a fair English education. In 1894 the course was extended to three years. In 1896 the requirements for admission were made the same as in the College of Letters and Science. At the time of its organization the College occupied rooms in the capitol building.

It now occupies a commodious building especially erected for it in 1893.

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Objects of the Course.

The College of Law offers a course of study covering a period of three years. It is designed to teach the fundamental principles of the English and American law in a thorough manner, and to fit the student for the active practice of the profession. In addition to the regular law courses, other departments of the University offer work in Comparative Constitutional Law, International Law, and Roman Law, which are open to law students.

Admission.

Students applying to the College of Law may be admitted, as are students in other departments, by either of two methods:—

First, on certificates from accredited schools or colleges.

Second, on examination at the University.

The requirements for admission are the same as those for admission to the other colleges of the University, stated on p. 57, with the following special requirements:—

Beginning with the University year 1905-06 all applicants for admission to the College of Law as candidates for a degree will be required to present additional credits equivalent to the work of the freshman year in the College of Letters and Science.

Beginning with the University year 1907-08 all applicants for admission to the College of Law as candidates for a degree will be required to present additional credits equivalent to the work of the freshman and sophomore years in the College of Letters and Science

Applicants who can satisfy the general entrance requirements of the University will be admitted as special students.

The examinations are conducted at the same time and by the same members of the Faculty as the examination of candidates for admission to the College of Letters and Science.

In addition to the other entrance requirements, all candidates for admission to the College of Law, whether graduates of accredited high schools or not, are required to take the regular entrance examination in English, required for admission to the College of Letters and Science, (see p. 60) except,

(a) Students of the University who have already passed such examination.

(b) Graduates of other approved colleges and universities. But the Faculty may require any student to take additional work in English, if, in their judgment, it is necessary.

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Those intending to apply for examination for admission as juniors, or for advanced standing, should notify the Registrar of the Unversity before the beginning of the year, and apply for directions, as examinations cannot be taken later.

Examinations for admission to the Junior class will be held on June 15-16, and September 26-27, 1905, beginning at 9 o'clock.

While students are admitted as above, yet those who are able to satisfy only the minimum requirements for admission will probably find it difficult to do the work required in a satisfactory manner. Such further preparation as may be derived from a college course, or at least the first two years of it, is strongly recommended.

Advanced Standing.

MIDDLE YEAR.

Candidates complying with the general requirements for admission to the College as above set out, will be admitted to the Middle year on passing satisfactory examinations in the subjects of the Junior year. Students who have graduated from the College of Letters and Science and who have elected and taken seven hours per week in the Junior year of the College of Law, and passed successful examinations therein, will be admitted to the Middle year.

SENIOR YEAR.

Candidates complying with the general requirements for admission to the College as above stated will be admitted to the Senior year on passing satisfactory examinations in the subjects of the Junior and Middle years, and in addition thereto presenting certificates signed by the executive officer of a law school of good standing having a three years' course, showing at least one year's study as a regularly enrolled student of such school.

Candidates will be given equivalent credit for satisfactory work done in other law schools in good standing having a three years' course, upon presenting properly authenticated certificates of such work.

Time of Examinations.

Examinations for advanced standing will be held at the Law Building on the Monday, Tuesday, and Wednesday of the opening week of the University year.

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Time of Opening.

Lectures begin on the opening day of the semester. All students are required to enter at that time. Entrance after that date will be permitted only for good cause shown.

Graduation.

The degree of Bachelor of Laws will be conferred upon all candidates of good moral character and at least twenty-one years of age, who have complied with the following conditions:

1. Credit for at least 60 term hours (equivalent to ten hours a week during the entire course).

2. Residence of at least two years in a law school of good standing having a three years' course, one of which must have been in this College. But an average standing of not less than 85 per cent. will be required of all students seeking to graduate with less than three years' residence at this or some other law school.

3. The preparation and presentation of a satisfactory thesis of not less than 2,500 words on some legal topic selected under the direction of a member of the Faculty.

Admission to the Bar.

The statutes of the State provide that any resident graduate of the Law department of the University of Wisconsin shall be admitted to the bar of any court upon the production of his diploma, and may be admitted to the Supreme Court when not in session by an order signed by one of the Justices thereof and filed with the clerk. (R. S. Wis., sec. 2586.)

Under this statute and a rule of the Federal court, it is customary for the members of the graduating class, on motion of a member of the Faculty, to be admitted to the Supreme Court of the State, and to the district and circuit courts of the United States, immediately upon graduation. This entitles them to admission to the bar of any court of record in Wisconsin and all federal courts.

COURSES OF INSTRUCTION.

The courses of instruction are arranged to present, as far as possible, the fundamental topics of the law during the Junior year, and the specialized subjects during the Middle and Senior years.

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Junior Year.

Contracts. Keener's *Cases on Contracts. Three hours a week; both semesters.* Professor RICHARDS.

The design of this course is to develop the general principles of the law of contract as preliminary to the study of specialized forms of legal obligations that have their foundation in contract, and which are treated in separate courses. The principles of mutual assent, consideration, the rights and liabilities of third persons, conditional and unconditional contracts, release and discharge of contracts, are fully treated.

Common Law Pleading. Ames' *Cases on Common Law Pleading* (1st ed.). *One hour a week; both semesters.* Professor MACK.

This course will be limited to the essential principles of common law pleading that are of present importance, and consideration will be given to their influence on the codes. The course will cover the common-law classification of actions, the scope of affirmative and negative pleas, and of demurrers, and the general requisites of pleading.

Law of Persons. Browne on *Domestic Relations*, and cases. *One hour a week; both semesters.* Professor JONES.

This course presents the rights and liabilities of persons laboring under legal disabilities due to peculiar conditions, and embraces the special topics: husband and wife, parent and child, guardian and ward, master and servant, infancy, and insanity.

Property I. *One hour a week; both semesters.* Professor OLIN.

The course in real property extends throughout two years. During the first semester this course deals with the nature of real property, tenure and seisin, the ownership of land, including the extent or duration of estates, equitable ownership, and future estates.

During the second semester the subject of future estates is completed, followed by concurrent ownership, estates and interests arising from marriage, rights of enjoyment incident to ownership.

Personal Property. Gray's *Cases. One hour a week; first semester.* Mr. HORACK.

The distinction between real and personal property is indicated. The nature and acquisition of rights in personal property is considered, with particular reference to the topics of wrecks, estrays, statute of limitations, accession, confusion, market overt; also the transfer of rights in personal property by gifts, annuities, possession, judicial process, bailment, pledge, and finding.

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Criminal Law and Procedure. Chaplin's *Cases. One hour a week; first semester. Two hours a week; second semester.* Professor SMITH.

This course deals with the fundamental principles of Criminal Law, both at common law and by statute, supplemented by a course in Criminal Procedure.

Torts. *Cases on Torts. Ames, Vol. I; Smith, Vol. II. Two hours a week; both semesters.* Professor GILMORE.

This course deals with the subjects of trespass, conversion, defamation, malicious prosecution, deceit, malicious injury by influencing the conduct of a third person; with the doctrine of legal cause, contributory and imputed negligence, liability of maker or vendor of chattels, duty of care on the part of the occupier of land or buildings, liability in extra-hazardous occupations, liability for fire or explosives, liability of owner or keeper of animals, joint wrong-doers.

Courts and their Jurisdiction. (No text-book.) *Ten lectures; first semester.* (Optional.)

This course is instituted in recognition of the difficulties that confront the student at the beginning of his study, due to his ignorance of the judicial system. The purpose of this course is to explain the origin, jurisdiction, and relations of the various courts of original and appellate jurisdiction, both at common law and under American constitutions and statutes; the meaning of the term "judicial precedent," the course of appeal, the method of reading and analyzing cases, the preparation of head notes and summaries, the proper use of text-books and digests in tracing out legal principles.

Middle Year.

Commercial Paper. *Two hours a week; both semesters.* (Omitted in 1904-05.)

Private Corporations. Smith's *Cases on Private Corporations. Two hours a week; both semesters.* Professor RICHARDS.

This course deals with the general nature of corporations, including the method of creation, rights and liabilities of stockholders, express and implied powers, duties and powers of directors, rights of creditors, liability of corporation for *ultra vires* acts, foreign corporations, legislative control, etc.

Evidence I. Jones on *Evidence*, and selected cases. *One hour a week; both semesters.* Professor JONES.

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The courses in evidence are continuous and extend through the Middle and Senior years. During the Middle year the following subjects are considered: The nature of evidence; presumption; judicial notice; relevancy; burden of proof, best evidence; admissions; hearsay and opinion evidence.

Property II. Tiedeman on *Real Property*, and selected cases. *One hour; both semesters.* Professor OLIN.

The course continues the subject as concluded in the Junior year, by which it must be preceded, and includes, during the first semester, a consideration of the rights to dispose of land not based on ownership, of powers, covenants running with the lands, restrictions, rents, public rights in land, voluntary transfers *inter vivos*. During the second semester the course covers the transfer of right in land by will, dedication, adverse possession, prescription, accretion, estoppel, escheat, and forfeiture, restrictions on the freedom of transfer; liens including mortgages.

Equity I. Keener's *Cases in Equity. Three hours a week; first semester.* Professor SMITH.

The entire course in equity jurisdiction occupies three hours a week for three semesters.

In the first semester will be taught the nature and general outlines and limitations of the jurisdiction, as based upon inadequacy of legal remedy, with something of its history and development, and its application to torts, (waste, trespass, nuisance, etc.)

Code Pleading. Selected Cases. *Two hours a week; both semesters.* Professor BASHFORD.

The course in code pleading is designed to cover the whole field of pleading under the codes, both in law and equity. The student will be required to draw the papers necessary in the course of framing an issue for trial. The work of the class room is supplemented by the Practice Court throughout the year.

Trusts. Ames' *Cases on Trusts.* (2nd ed.) *Two hours a week; first semester.* Mr. MACK.

The course is planned as a fundamental course on equitable rights as distinguished from equitable remedies for legal rights, which are dealt with in the course on Equity Jurisdiction. The first part of the course will be devoted to express and resulting trusts, including their creation, and the rights and obligations of the trustee and the beneficiary to each other and to third persons. Followed by a study of constructive trusts, illustrating fundamental equitable obligations established to furnish relief for breach of trust, fraud and the like.

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Agency. Wambaugh's *Cases on Agency. Two hours a week; first semester.* Professor GILMORE. (Omitted in 1904-05.)

The nature of the relation of principal and agent, master and servant, the agent's power to subject his principal to liability in tort and contract, the agent's responsibility to third persons, parties to writings, undisclosed principal, the mutual rights and duties of principal and agent, delegation by agent, ratification, termination of the relation.

Public Service Companies. *Three hours a week; first semester.* Professor GILMORE.

This course covers work usually included under the subject of Carriers. It deals with the nature of public calling, its obligations and rights, rights and duties of common carriers, telephone and telegraph companies, light and water companies, inns and warehouses.

Sales. Adams' *Cases on Sales. Two hours a week; first semester.* Professor SMITH.

The course in sales of personal property follows naturally upon the general course in Contracts. It is a specialized extension of a portion of that course and an investigation of certain consequences that flow from the special class of contracts that result in sales. In connection with it are taken up the subjects of vendor's liens, stoppage in transitu, the statute of frauds, fraudulent conveyances, and the Wisconsin chattel mortgage law.

Damages. Beale's *Cases on Damages. Two hours a week; second semester.* Judge STEVENS.

This course deals with the respective functions of the court and jury in awarding damages, the theory of relief, the rules applied by the courts in regard to compensatory and punitive damages, direct and consequential damages, avoidable consequences, mitigation, and a study of special groups of cases in contract and tort where circumstances make the general rules inapplicable.

Insurance. Wambaugh's *Cases on Insurance. Two hours a week; second semester.* Mr. HORACK.

This course includes a study of the nature and kinds of insurable interests; fire, marine, and life insurance; the nature and interpretation of insurance contracts, and the rights and liabilities thereunder.

Partnership. Burdick's *Cases on Partnership. Two hours a week; second semester.* Professor GILMORE.

The nature of a partnership; formation and dissolution;

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powers of partners. Rights and remedies of creditors; duties and liabilities of partners *inter se;* accounting and distribution.

Equity II. Keener's *Cases on Equity. Three hours a week; second semester.* Professor SMITH.

This course is a continuation of Equity I and deals with the jurisdiction in cases of fraud, misrepresentation, and concealment.

Equity III. Keener's *Cases on Equity. Three hours a week; second semester.* Professor SMITH.

This course is given in alternate years with Equity II and covers the jurisdiction of equity over the specific performance of contracts.

Senior Year.

Evidence II. Jones on *Evidence. One hour a week; both semesters.* Professor JONES.

This course is a continuation of Evidence I, by which it must be preceded. The course includes a study of parol evidence, documentary evidence, competency, and the examination of witnesses.

Code Practice. Lectures, statutes, and selected cases. *Two hours a week; both semesters.* Professor BASHFORD.

This course must be preceded by the course in Code Pleading, and deals with the conduct of causes in court after the parties are at issue, and with the remedies for the enforcement of judgments and orders. The work of the class-room is supplemented by the Practice Court throughout the year.

Wills. Cassoday on *Wills,* and selected cases. *One hour a week; first semester.* Professor OLIN.

This course deals with the laws of descent and distribution, the essentials of wills and the requisites for their due execution, the probate of wills.

Quasi-Contracts. Keener's *Cases on Quasi-Contracts. Two hours a week; first semester.* Professor SMITH.

Under the head of *quasi* or constructive contracts is embraced all that very large class of obligations which, while not contractual, in fact, are enforced as if they were so, rather than that the plaintiff should fail of any remedy. They constitute largely that great mass of obligations for the enforcement of which the action of *assumpsit* was invented. That they have not been always clearly classified or distinguished by theoretical writers upon the

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law, and that a more or less variable and inconsistent terminology has sometimes been applied to them, even by the courts, makes it only the more necessary for the systematic student to determine the foundation and extent of the obligation.

Suretyship and Mortgages. Ames' *Cases on Suretyship. Two hours a week; first semester.* (Omitted in 1904-05.)

The nature of the contract of suretyship, suretyship in the form of a collateral undertaking and in the form of an independent undertaking, the surety's defenses, surety's right of subrogation, indemnity, contribution, and exoneration.

The course in Mortgages deals with the fundamental conception and nature of the mortgage, its elements, the obligation, and the respective rights of mortgagor and mortgagee.

Admiralty. Ames' *Cases on Admiralty. Two hours a week; first semester.* Mr. HORACK.

This course deals with the origin, nature and scope of admiralty jurisdiction, rights and liabilities of owners of vessels, bottomry and respondentia, general average, freight, salvage, towage, pilotage, maritime torts.

Patents. *One hour a week; first semester.* (Omitted in 1904-05.)

Constitutional Law. McClain's *Cases on Constitutional Law. Two hours a week; both semesters.* Professor GILMORE.

Nature of the federal constitution and its amendments, relation of the states to the federal government, the departments of government, taxation, regulation of commerce, naturalization, bankruptcy, currency, etc., the powers of the executive, the judiciary and the jurisdiction of federal courts, civil rights and their guarantees, political privileges, protection of contracts and property.

Torts. Bigelow on *Torts. One hour a week; second semester.* (Discontinued after 1904-05.) Professor OLIN.

This course is open only to members of the class graduating in 1905. It deals with the general nature of absolute rights and duties, with a study of the specific wrongs of deceit, malicious prosecution, conspiracy, malicious interference with contract, defamation, assault and battery, false imprisonment, enticement and seduction, trespass, conversion, nuisance, damages by animals. Also, the general subject of liability for negligence.

Conflict of Laws. Selected Cases. *Two hours a week; second semester.* Mr. HORACK.

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This course covers a comparative study of the theories, rules of law and practice in different jurisdictions, with special reference to the laws of the various states; of jurisdiction *in rem* and *personam;* of rights as distinguished from remedies, and the recognition and enforcement of rights.

Probate Law. *Statutes and Selected Cases. Two hours a week; second semester.* Professor SMITH.

This course deals not only with the history and development of administration, and general substantive probate law, but also, and especially, with probate practice and procedure under the Wisconsin statutes. There is great similarity between the probate codes of Wisconsin, Michigan, Minnesota, Iowa, and other northwestern states. The course may be profitably taken by students intending to practice in any state having a similar code to that of Wisconsin, though intended primarily for the benefit of Wisconsin students.

The actual probating of a will, complete administration of an estate, proceedings for the sale of real estate, appointments of guardians, etc., in the probate practice court, are a valuable and essential part of this course.

Bankruptcy. Williston's *Cases on Bankruptcy. Two hours a week; second semester.* Mr. MACK.

This course deals with the fundamental principles of bankruptcy and insolvency laws, including a special study of fraudulent conveyances.

Administrative Law. *One hour a week; second semester.* (Omitted in 1904-05.)

Illinois Practice. Twelve lectures. (Omitted in 1904-05.)

This is an optional course for students intending to practice in Illinois, and is given every two years.

Required and Elective Courses.

Candidates for the degree are required to take all the subjects of the Junior year, except those marked optional, and ten hours of work in the Middle and in the Senior years. The work of the Middle and Senior years is elective. Middle students may elect not less than ten nor more than fourteen hours in courses offered in the Middle year. Senior students may elect not less than ten nor more than fifteen hours in courses offered in the Senior year and in courses not already taken by them when Middle students.

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No student is permitted to count more than ten hours of work in any one year towards the total hours required for the degree. Elections in all cases are subject to the approval of the Dean.

Procedure and Practice Courses.

Courses in Procedure and Practice extend throughout the entire three years and comprise Common Law Pleading, one hour, junior year; and Code Pleading and Practice, two hours a week, during the middle and senior years, supplemented by four hours a week in the Practice Court. The purpose of the course is to instruct the student in the principles of pleading and practice at common law and under the Codes, by duplicating as far as possible the steps taken by an active practitioner in the preparation and trial of causes at law and in equity throughout the entire field of litigation. The student is required to prepare pleadings in assigned cases, and as counsel in the practice court carry through the various steps in a cause from its inception to the final judgment. Instruction will also be given in the drawing of all forms of legal papers. The Practice Court will be conducted by Professor R. M. Bashford, a veteran professor in the school, and a practitioner of large experience at the bar. Unusual facilities are thus provided to prepare the student for the active practice of the profession.

Law Clubs.

The work of the Practice Court is supplemented by the law clubs, voluntary student organizations, in which legal questions are argued and decided.

Elective Studies.

Students of the College of Law will be permitted to pursue studies in other departments of the University, subject to the following regulations:

Students of the junior class of the College of Law may elect studies in the College of Letters and Science and substitute them for studies in the junior year of the law course, to an amount not exceeding four hours per week for that year. The studies to be elected are to be designated by the College of Law.

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Seniors in the College of Letters and Science will be permitted to elect, as a part of their undergraduate course, such studies in the College of Law as are specified on page 97.

Graduates of the College of Letters and Science who have elected and taken seven hours per week for one year in the College of Law are to be admitted to the middle class of the College of Law. The fees for such elective studies in law are fixed by the Regents at $25 per annum.

Resources of the College of Law.

The College of Law is maintained from appropriations made for the purpose by the Regents, and from matriculation fees.

By the will of the late Judge Mortimer M. Jackson, funds to the amount of $20,000 were bequeathed to the University to found and maintain a Professorship of Law.

Law Building.

This building was constructed at a cost of $86,000, from brown Superior sandstone. It is amply provided with lecture and library rooms, and is equipped with the most approved systems of lighting, heating, and ventilation.

The Library.

The College of Law has an excellent library of the best law books and reports, comprising practically all the reports of the several states and the United States, and the English reports; also a large assortment of text books. This library is maintained by special appropriation of the legislature. The library is liberally administered, being accessible during each week-day from 8 A. M. to 10 P. M. The students are allowed free access to the books.

For information concerning the other libraries accessible to students, see p. 37.

Advantages of Location.

Unusual facilities for observing the practice of the various courts are offered the students of the College of Law, from the fact that the Supreme court of the state is in session during most of the academic year, and the students have opportunity to listen to arguments by some of the ablest lawyers of the country.

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Two terms of the United States District and Circuit courts are held here annually, and important cases, both in law and equity, are tried, illustrating the procedure in the federal courts.

The Circuit court of Dane county holds three terms annually, giving the students opportunity to observe the details of the practice under the code system.

The Municipal court of Dane county sits daily for the trial of criminal causes.

The legislature of the state holds biennial sessions.

The University.

The University of Wisconsin has a corps of instructors selected from the best scholars in their respective specialties. On obtaining the proper certificate from the dean, students of the College of Law may pursue studies for which they are prepared in other departments of the University, without extra charge, in so far as such studies do not interfere with their work in the College of Law. The lectures on political economy, institutional history, and such special topics as the distribution of wealth, socialism, taxation, government of cities, criminology, public finance, and various other topics are of especial importance and value to the student of American law.

Societies.

The Forum and the Columbia are incorporated literary societies, composed entirely of law students. Each of them holds weekly meetings for debates and other literary exercises.

Fees and Expenses.

All fees are payable in advance at the office of the Secretary of the Regents. (See Tuition and Fees, p. 82.) Admission to membership in the classes is not permitted until the fees are paid. No deductions are made for absences, nor for failure to begin at the opening of the year, nor is extension of time allowed for payment of fees. Fees must in all cases be paid in advance.

Receipts showing the payment of tuition must be filed with the dean within ten days after entry.

It is most desirable that each student should provide himself with his own text-books and books of selected cases which are designated in the program of instruction. These books may be

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obtained from the Secretary of the Regents at a considerable discount from the quoted prices. The books required for the first year can be obtained for about $50 and for the second and third years for about $80.

The expenses of living are moderate. (See p. 86.)

Students desiring information in regard to boarding places, or general information as to expenses, should address their inquiries to the Secretary of the Regents.

A careful persual of this general statement, it is believed, will supply all needed information; but should further inquiries as to admission, examination, etc., be necessary, they should be addressed to the Dean of the College of Law, Madison, Wis.

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THE COLLEGE OF AGRICULTURE.

STAFF.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
W. A. HENRY, D. Agr., D. Sc., Dean, and Professor of Agriculture.

S. M. BABCOCK, Ph. D., Professor of Agricultural Chemistry.
E. H. FARRINGTON, M. S., Professor of Dairy Husbandry.
H. L. RUSSELL, Ph. D., Professor of Bacteriology.
A. R. WHITSON, B. S., Professor of Agricultural Physics.
E. P. SANDSTEN, Ph. D., Professor of Horticulture and Economic Entomology.
F. W. WOLL, Ph. D., Associate Professor of Agricultural Chemistry.
R. A. MOORE, Assistant Professor of Agronomy.
G. C. HUMPHREY, B. S., Assistant Professor of Animal Husbandry.
G. N. KNAPP, B. S., Assistant Professor of Agricultural Engineering.
A. S. ALEXANDER, M. D. C., V. S., Professor of Veterinary Science.
GEORGE MCKERROW, Superintendent of Farmers' Institutes.
W. J. CARSON, B. S. A., Instructor in Dairying.
C. W. STODDART, M. A., Instructor in Agricultural Physics.
E. G. HASTINGS, M. S., Instructor in Bacteriology.
J. C. BROWN, M. S., Instructor in Agricultural Chemistry.
G. A. OLSON, B. S., Instructor in Agricultural Chemistry.
W. S. BROWN, A. B., B. S. A., Instructor in Horticulture.
J. G. FULLER, B. S., Assistant in Animal Husbandry.
H. C. TAYLOR, Ph. D., Instructor in Agricultural Economics.
CHAS. A. OCOCK, B. S., Assistant in Agricultural Engineering.
A. L. STONE, Assistant in Agronomy.
FRANK KLEINHEINZ, Assistant in Animal Husbandry.
JAMES HUTTON, Assistant in Animal Husbandry.
C. J. MCCOMB, Assistant in Animal Husbandry.
ALBERT OLIVER, Assistant in Animal Husbandry.
H. SANDELL, Assistant in Agricultural Physics.
MARTIN H. MEYER, Assistant in Creamery.

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H. W. QUIMBY, Assistant in Dairy Machinery.
F. W. LAABS, Assistant in Cheese Making.
H. C. JORDAN, Assistant in Cheese Making.
H. A. HASS, Assistant in Pasteurizing.
PETER DUKLETH, Assistant in Farm Dairying.
FRED. MARTY, Assistant in Foreign Cheese Making.
IVER BERGSTRUM, Assistant in Creamery.
R. W. ROBERTS, Assistant in Creamery.
A. C. HABERSTICH, Assistant in Farm Dairying.
MRS. S. M. BRIGGS, B. L., Librarian.

General Information.

The College of Agriculture, while distinct from the other grand divisions of the University in its buildings, its corps of instructors and investigators, and its equipment, is nevertheless intimately interwoven with the whole institution, gaining immensely by such association and union. Agricultural students have all the advantages incident to a great university, such as instruction and counsel from the corps of professors in other colleges, the general libraries, laboratories, societies and associations, while in their specific college they find every factor available to its limit for special advancement along chosen lines.

Four buildings located at the west end of Observatory Hill are devoted to agricultural research and instruction. The largest and most recently constructed is Agricultural Hall, a four-story structure, 200 feet in length by 64 feet in width, built of Bedford limestone and buff pressed brick, with a red Spanish tile roof. In Agricultural Hall are the executive offices of the College and Experiment Station, the offices of the Farmers' Institute, and the offices and laboratories of the departments of Agricultural Chemistry, Animal Husbandry, Agricultural Bacteriology, and Agronomy, with additional rooms for departments yet to be established. In the rear of the main structure is an octagon wing, 66 feet in diameter, two stories in height. The first story of the octagon is occupied by the agricultural library, with its large reading room. In the upper story is located an auditorium, with gallery, having a total seating capacity of 750.

Hiram-Smith Hall, devoted to dairy instruction and research, is a brick and stone structure, having a frontage of 103 feet by 48 feet in depth, two and three stories in height. Here are found

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the offices of the department, lecture rooms, laboratories, rooms for cream separation and cheese making; also rooms for churning and butter working, pasteurization, refrigeration, etc. An addition at the rear furnishes rooms for the manufacture of foreign cheese, cheese pressing, cheese curing, etc. Both buildings are supplied with refrigeration, furnished by an ammonia plant. The Dairy department receives over four million pounds of milk annually from more than a hundred different farms; from this is manufactured and sold in Madison, Milwaukee, Chicago, and elsewhere, pasteurized milk, pasteurized cream, print and package butter, and several varieties of cheese.

The joint Horticulture-Physics building is a three-story brick and limestone structure, with a frontage of 76 feet by 60 feet in depth. The right half of the building, devoted to horticulture, is provided in the rear with three green-houses, each 22 by 76 feet in area, back of which is a potting house and general laboratory, 22 by 66 feet, one story in height, over an ample root cellar. The grounds of the Horticultural department embrace about 12 acres, mostly occupied with fruit trees, shrubs, and perennial plants. The seedling experimental apple and plum plantations are especially extensive.

The left half of the building is devoted to instruction and research in the physics of agriculture. At the rear is a green house, 44 by 76 feet in area. The Agricultural Physics department controls 12 acres of the University farm, which area is devoted to irrigation, soil, drainage, and fertilizer experiments. An irrigation plant consisting of engine, pump, and reservoir, supplies water for ten acres of experimental plots. Additional provisions include a reservoir, a distributing system, etc., for cranberry growing at the branch cranberry station at Cranmoor, Wood County.

The heating plant for the College of Agriculture, occupying the basement of a brick structure, 35 by 50 feet in area, is provided with five steam boilers aggregating 370 horse power.

About 60 rods west of the group of agricultural buildings above described are located the farm buildings proper. The principal ones of these are four large barns for the separate accommodation of horses, cattle, sheep, and swine. Between the two wings of the dairy barn, housing the dairy cows and young stock, is a sky-lighted, steam-heated stock-judging room, 40 by 70 feet in area. A second sky-lighted, stock-judging building, one

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story in height, 36 by 74 feet, is provided with electric light and steam heat, and can be divided into two rooms by a folding partition.

The legislature of 1903 made provision for a department of Agricultural Engineering. Mr. George N. Knapp, a graduate of the University, is in charge of this department, his services having begun in March, 1904. During the season of 1905 there will be erected an Agricultural Engineering building, which will be equipped with suitable machinery and appliances for both research and instruction. Instruction will be given to the students, and aid to the farmer in planning and erecting farm buildings, especially barns and silos, the care and management of farm motors and farm machinery, the laying out of farms, road-building, etc.

The Agricultural College domain comprises two farms, one of which forms a part of the University Campus, and embraces about 125 acres of tillable land. Two miles distant is another farm of 220 acres. Both tracts are devoted to instruction and research, and experiments with new varieties of farm crops, fertilizers, tillage, drainage, etc., are always in progress. No attempt is made to operate a "model farm," but rather so to conduct all operations as to add to the sum of human knowledge.

Live Stock.

The leading breeds of live stock are represented by carefully selected specimens chosen primarily for instruction, but in many cases also used in research work. These animals represent an outlay of about $20,000, ten thousand of which were appropriated for the purpose by the legislature of 1903.

Library.

The Agricultural College Library embraces over 7,000 bound volumes and many pamphlets, all distinctly agricultural in character. It is especially strong in its files of scientific agricultural journals, both American and foreign, and of herd, stud, and flock books of pure-bred animals. About $1,500 are now expended annually for books, periodicals, and binding. A trained librarian is in attendance to assist the student. This library, in combination with the general University library and the State Historical library, gives unusual service to the user of books.

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Societies.

Long Course, Short Course, and Dairy students each maintain a literary society which meets weekly. These organizations are for drill in parliamentary practice, training in declamation, debate, and essay writing, as well as for the discussion of professional and practical questions.

Students of the College of Agriculture, former and present, engaged in farming in Wisconsin, maintain an Experiment Association with a paid membership of over five hundred, for the purpose of co-operating with the Experiment Station in advancing the agriculture of the commonwealth. Practical experiments are planned by Station officials and a committee of the Association, and are carried out on the farms of the members. Especial attention is given to testing promising new varieties of farm grains, and plants secured through the Experiment Station and the United States Department of Agriculture, and to multiplying and disseminating the desirable varieties. By means of this organization, the members of which are scattered all over the State, the College is in close touch with the great body of Wisconsin farmers, numbering 175,000 in all. The legislature of 1903, recognizing the importance and value of this Association, voted it an annual appropriation of $1,000, and directed the printing of 5,000 copies of the annual report by the state printer.

Fees and Expenses.

For tuition and other fees, see p. 81.

The expenses of resident students in the graduate and long courses are practically the same as for those pursuing other University courses.

The expenses of resident Short Course and Dairy students will vary from $75 to $90 for the term for room, board and washing, and necessary books.

Plan of Agricultural Education.

The University system of agricultural education has three aims:

First, to develop agricultural science through investigation and experiment, and to disseminate the same through bulletins and reports.

Second, to give instruction in agriculture at the University.

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Third, to disseminate agricultural knowledge among the farmers of the State by means of institutes and popular publications.

Courses of Instruction.

Systematic courses in agriculture have been arranged to meet the wants of students having different purposes in view.

THE GRADUATE COURSE offers to advanced students opportunities for professional training and original investigation, made possible through an active experiment station, associated with numerous scientific laboratories. The special lines of study will be left largely to the selection of the student, subject to the approval of the agricultural faculty. It will be practicable for such students to participate in experiments in progress, and, after suitable experience, to conduct independent investigations. When contributions of knowledge of permanent value are made they will be published through the bulletins of the experiment station under the name of the contributor.

THE LONG COURSE offers scientific training in agricultural chemistry, agricultural physics, horticulture, animal husbandry, dairying, agricultural bacteriology, agronomy, and agricultural engineering. Besides the strictly professional branches, it embraces general training in chemistry, physics, botany, zoology, geology, bacteriology, and other branches which have an application in agriculture. The field is so broad, however, that it is impossible for the student in four years to pursue all the courses offered in addition to acquiring the necessary fundamental studies, and hence a large liberty of selection is allowed.

THE SHORT COURSE is provided for those who can devote only a limited time to study, and who wish to return at once to the active operations of the farm, and therefore desire the greatest amount of directly useful knowledge that can be acquired in the brief time allowed.

THE DAIRY COURSE is designed for those who intend to operate creameries and cheese factories.

THE FARMERS' COURSE, covering the brief period of two weeks in winter, is designed for busy farmers, and follows only lines of intensely practical instruction.

Terms of Admission.

GRADUATE COURSE IN AGRICULTURE. Graduates of this University and of other colleges and universities in good standing are

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admitted to this course without examination.

LONG COURSE IN AGRICULTURE. The requirements for admission to this course are stated on p. 60.

ADULT SPECIAL STUDENTS IN AGRICULTURE. For terms of admission for adult special students, see p. 71.

SHORT COURSE IN AGRICULTURE. Students in this course must be at least sixteen years of age and have a good common school education. No entrance examinations are required, but those who come poorly prepared can not expect to receive the full benefits of the course.

DAIRY COURSES. The requirements for admission to the winter course are the same as for the Short Course, excepting that the candidates must have had not less than six months experience in a creamery or cheese factory before entering the course. For admission to the summer course no previous experience is required.

FARMERS' COURSE. No examinations are required for admission to this course, but the candidate must be at least twenty-five years of age.

Degrees.

The degree of Bachelor of Science (Agricultural Course) is conferred upon students who successfully complete the long course in agriculture. The degree of Master of Science is conferred upon agricultural graduates who complete one year of advanced study at the University and present an acceptable thesis on a topic approved by the College Faculty.

OUTLINE OF THE LONG COURSE IN AGRICULTURE.

Freshman Year.

FIRST SEMESTER.

	Hrs. per W'k.
Chemistry 1	5
German 2S	4
Mathematics 2	3
English 1	3
Military Drill	2
Gymnastics	2

SECOND SEMESTER.

Chemistry 1	5

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	Hrs. per W'k.
German 2S	4
Agricultural Surveying	3
English 1	3
Military Drill	2
Gymnastics	2

Sophomore Year.

FIRST SEMESTER.

German 3S	2
Biology 1	5
Physics 1	5
Chemistry 10	4
Military Drill	2
Gymnastics	2

SECOND SEMESTER.

German 3S	2
Biology 1	5
Physics 1	5
Vegetable Physiology 17	5
Military Drill	2
Gymnastics	2

Junior Year.

FIRST SEMESTER.

Agricultural Chemistry 1 and 2	5
Agricultural Physics 2	5
Bacteriology 1	5
Agricultural Economics and Farm Management	3

SECOND SEMESTER.

Required.

Farm Engineering, 1 and 2	4

Electives.

Agricultural Chemistry	5
Agricultural Physics	5

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	Hrs. per W'k
Agricultural Bacteriology 16 or 17	5
Horticulture	5
Animal Husbandry	5
Dairying	5
Agronomy	3
Farm Engineering	5

From the above electives the student will choose a major, to begin with the second semester of the junior year and continue through the senior year—fifteen hours in all. The professor in whose department the major is taken will select a minor to the amount to ten hours. The student will elect not less than ten additional hours in the College of Agriculture, the minimum graduation requirements during the last three semesters being forty-five unit hours.

Senior Year.

Continuation of elective course and preparation of thesis.

The total requirements for graduation are 120 unit hours.

DEPARTMENTS OF INSTRUCTION.

THE LONG COURSE IN AGRICULTURE.

AGRICULTURAL CHEMISTRY.

PROFESSOR BABCOCK, ASSOCIATE PROFESSOR WOLL AND MR. BROWN.

The courses in Agricultural Chemistry are open to students who have completed course 1 in general chemistry, and have had at least one semester's work in qualitative and quantitative analysis. Courses 1 to 3 are primarily for undergraduate students, while courses 14 to 19 are advanced courses adapted for graduates and for undergraduates who have completed courses 1 and 2, or their equivalents. The courses in Vegetable Physiology 17, and Agronomy 1, are further prerequisites to, or must be taken in conjunction with, course 17. The courses in Physiology 3, and Animal Husbandry 1 and 4, are further prerequisites to, or must

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be taken in conjunction with course 18. Course 1 in dairying and course 3 given below, are prerequisites to course 19.

Primarily for Undergraduates.

1. Agricultural Chemistry. Lectures *M., W., at* 2. Professor BABCOCK. and Mr. BROWN.
2. Agricultural Analysis. Laboratory work *Tu., Th., F., at* 2. Mr. BROWN.
3. The Chemistry of the Dairy. Laboratory practice. *Second semester; Tu., Th., at* 2. Mr. BROWN.

For Undergraduates and Graduates.

14. Advanced Agricultural Analysis. Examination of feeds, plants, and animal products. Conferences, assigned reading, and laboratory work. *Five laboratory periods a week.* Professor BABCOCK.
15. Detection of Adulteration of Concentrated Feeding Stuffs. Includes chemical and microscopical examination. *Second semester; two laboratory periods a week.* Associate Professor WOLL.
16. Sugar Beet Analysis. Laboratory work. *First semester; M., W., at* 2. Associate Professor WOLL.

Primarily for Graduates.

17. Plant Nutrition. A study of the influence of various fertilizers upon the development and composition of plants, to include field and pot experiments. *The equivalent of five laboratory periods a week.* Professor BABCOCK.
18. Animal Nutrition. Digestibility of foods and their influence upon growth, production of milk, etc. Conferences, assigned reading, with laboratory and barn work. *Five periods a week.* Associate Professor WOLL.
19. Advanced Dairy Chemistry. The proximate analysis of milk and its products, and a study of the changes which occur in the manufacture of dairy products. Conferences and laboratory work. *Five periods a week, throughout the year.* Professor BABCOCK.

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AGRICULTURAL PHYSICS.

PROFESSOR WHITSON AND MR. STODDART.

As prerequisites to the courses in soils a year's work in botany, physics and general chemistry, and one semester's work in analytical chemistry are required. Course 2 is required of all juniors in the Long Course in Agriculture; this and courses 3 and 4 give a broad foundation for agricultural practice, so far as this relates to soil management.

Courses 15 and 16 are planned for those who desire to take their thesis in soils, or to prepare for investigational work.

Primarily for Undergraduates.

1. Agricultural Surveying. An elementary course in the use of the level and plane table, with special reference to drainage, irrigation, platting farms, etc. Required of all freshmen. *Second semester; hours to be arranged.* Professor WHITSON and assistant.
2. Soils. A general discussion of the origin and classification of soils, and of the influence of their physical, chemical, and biological conditions upon the growth of plants. *First semester; five times a week.* Professor WHITSON and Mr. STODDART.
3. Drainage, Irrigation, and Cultivation. Field and laboratory work. *Second semester; three times a week.* Professor WHITSON.

For Undergraduates and Graduates.

14. Agricultural Climatology. A study of the distribution of heat, light, and precipitation, and of their effects on the staple crops. *Second semester; Tu., Th., at 9.* Professor WHITSON.
15. Soil Physics. This course is principally laboratory work on the mechanical analysis and temperature of soils, and on the movements of the soil moisture. *First semester; five times a week, at hours to be arranged.* Professor WHITSON.
16. Soil Chemistry. A laboratory course on the methods of chemical analysis adapted to the study of soil fertility. Analytical chemistry, both qualitative and quantitative, is prerequisite. *Second semester; five times a week, at hours to be arranged.* Mr. STODDART.

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Primarily for Graduates.

17. The Origin and Classification of Soils. The process of soil formation are studied with special reference to the factors which determine their tilth and fertility. Conferences, field, and laboratory work. *Hours and credit to be arranged.* Professor WHITSON.

ANIMAL HUSBANDRY.

PROFESSOR HENRY, ASSISTANT PROFESSOR HUMPHREY, PROFESSOR ALEXANDER, MR. FULLER, MR. KLEINHEINZ, MR. HUTTON, MR. M'COMB, AND MR. OLIVER.

Course 1 is a prerequisite to course 15. Course 16 should be preceded by at least one semester's work in agricultural chemistry, course 1, and by one semester's work in courses 1 and 4. Courses 1 and 4, together with a reading knowledge of French and German, are a prerequisite to course 17, while courses 1 and 4 and a reading knowledge of German are a prerequisite to course 18.

For Undergraduates and Graduates.

1. Breeds of Live Stock. Principles governing the selection and judging of live stock. Lectures with practical applications. *Second semester; M., Tu., W., Th., F.* Professor HUMPHREY.
2. Breeding. The principles and methods as set forth in Darwin's *Animals and Plants under Domestication*, and the standard treatises upon stock breeding. *Second semester; M., Tu., W., Th., F.* Professor HUMPHREY.
3. Veterinary Science. A lecture and text-book course upon veterinary anatomy, physiology, surgery, and hygiene. *Second semester; M., Tu., W., Th., F.* Professor ALEXANDER.
4. Feeds and Feeding. Lectures and text-book studies on the laws of animal nutrition, composition of feeding stuffs, standard rations for farm animals, and the results of feeding trials conducted by the leading investigators of America and Europe. *First semester; M., Tu., W., Th., F.* Professor HENRY.

Primarily for Graduates.

15. Improved Breeds of Live Stock. An advanced study of the

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origin, characteristics, and usefulness of the more important breeds of live stock. *M., W., F.* Professor HUMPHREY.

16. Feeding Problems. The conduct of feeding trials with a group of farm animals; analyses of the feeding stuffs used; record of materials fed, gains made, etc. *M., Tu., W., Th., F.* Professor HENRY.
17. Nutrition of Farm Animals. A study of the nutrition investigations upon farm animals made at the research stations of American and Europe. *M., W., F.* Professor HENRY.
18. Researches in Nutrition. Either independently or under the direction of the department, qualified graduate students may conduct researches on the effect of definite nutrients upon the animal economy; *e. g.* upon growth, milk production, fecundity, development of the muscles, viscera, etc. This work will be combined with chemical studies of the nutrients employed, and of the bodies and organs of the animals subjected to experiment. *M., Tu., W., Th., F.* Professor HENRY.

DAIRY HUSBANDRY.

PROFESSOR FARRINGTON, MR. CARSON, AND ASSISTANTS.

The courses in Dairy Husbandry 1 to 5 are open to students who have had two years' undergraduate training in the scientific departments of the University, or their equivalents. Courses 16 to 20 are intended primarily for graduate students. Course 16 is open to students who have finished courses 1 and 3. Courses 17, 18, and 20 are open to students who have taken courses 1, 2, and 5, respectively, while courses 1, 2, and 5 are prerequisites to course 20.

Primarily for Undergraduates.

1. Creamery Buttermaking. Cream separation, cream ripening, churning, butter working, butter printing, etc. Lectures and factory work. *Throughout the year; five two-hour periods a week, at* 8. Professor FARRINGTON and Mr. MEYER.
2. Cheese Making. Lectures and factory work in making and curing Cheddar, Swiss, brick, Limburger, and Edam cheese. *Throughout the year; five two-hour periods a week, at* 8. Mr. CARSON.

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3. Dairy Machinery. Shop practice with engines, boilers, artificial refrigeration machinery, pipe fitting, etc. *Second semester; Tu., at* 8. Professor FARRINGTON and assistants.
4. Milk Inspection. Lectures and laboratory practice. *Second semester; M., at* 8. Professor FARRINGTON and assistants.
5. Milk and Cream Pasteurization. *Second semester; W., at* 8. Professor FARRINGTON and assistants.

For Undergraduates and Graduates.

16. Cream Separation. An historical study of the various farm and factory methods used for separating cream. Assigned reading with illustrative laboratory practice. *Four periods a week, throughout the year.* Professor FARRINGTON.
17. Milk Inspection and Testing. Methods used at farms, factories, and city supply stations, including inspection of a large number of farm dairies. *Second semester; four or more periods a week.* Professor FARRINGTON.
18. Butter Yield and Quality. A study of the effect due to the various manipulations in the manufacturing processes. *Second semester; four periods a week.* Professor FARRINGTON.
19. Pasteurization. Its application to butter making, cheese making, and city milk supply. *Second semester; four periods a week.* Professor FARRINGTON.
20. Cheese Making and Curing. A study of the effects produced by varying the usual processes of cheese making. *Hours to be arranged.* Professor FARRINGTON.

HORTICULTURE.

PROFESSOR SANDSTEN AND MR. BROWN.

Plant Physiology, course 17, is a prerequisite to all courses in this department and course 1 will be required of all pursuing any of the remaining courses. Course 3 is a prerequisite to course 4. Course 7 of the Agricultural Physics department is a prerequisite to course 6. Students pursuing course 7 will spend at least one summer in the department, having previously pursued courses 1, 2, and 5. Courses 1, 2, and 5 are prerequisites to course 19, with the further requirement that one year's time be given by the student taking this course. Course 5 is a prerequisite to course 20. Courses 1, 2, 3, and 5 are prerequisites to course 21.

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Primarily for Undergraduates.

1. Plant Propagation. An elementary course covering instruction in the various methods of propagating horticultural plants in the garden and green-house. Lectures and laboratory work. *Second semester; M., Tu., W.* Professor SANDSTEN and Mr. BROWN.
2. Fruit Growing. This course, in connection with course 1, will cover the general field of fruit growing, with especial reference to conditions in the Northwest. Lectures and recitations. *Second semester; Th., F.* Professor SANDSTEN.
3. Olericulture. This subject will be taught to meet the growing demands for instruction in this important branch of horticulture. Lectures and laboratory work. *First semester; W., Th.* Mr. BROWN.
4. Growing Vegetables Under Glass. A course in growing vegetables in the greenhouse. *First semester; M., Tu.* Mr. BROWN and Mr. LUGGER.
5. Economic Entomology. Lectures and laboratory work. *Second semester; two hours a week.* Professor SANDSTEN.
6. Landscape Gardening. Lectures, field-work, and the mapping of grounds, lawns, etc. *Second semester; two hours a week.* Professor SANDSTEN.
7. Commercial Fruit Growing. Lectures, reading, and practice-work in the orchards of the department. *First semester; M., Tu., W.* Professor SANDSTEN.

Primarily for Graduates.

18. Plant Breeding. An experimental course based upon the research work of the department. *Three or more laboratory periods a week.* Professor SANDSTEN.
19. Plant Propagation. With special reference to nursery practice. Emphasis will be laid upon the most approved methods of propagating fruit and ornamental trees, shrubs, and flowers. Conferences, assigned reading, and laboratory work. *Five laboratory periods a week.* Professor SANDSTEN.
20. Economic Entomology. With special reference to insects injurious to horticultural and agricultural crops. Facilities are provided for the breeding and for the study of the life histories of insects. The methods of compounding, and the

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uses of insecticides will be fully considered. *Second semester; M., W., F.* Professor SANDSTEN.

21. Experimental Horticulture. The planning of experiments, keeping records, tabulating work, etc. *Five laboratory periods a week.* Professor SANDSTEN.

BACTERIOLOGY.

PROFESSOR RUSSELL, ASSISTANT PROFESSOR FROST, AND MR. HASTINGS.

It is desirable that students who wish to take course 1 (General Bacteriology) shall have had General Chemistry and Biology. Course 1 is a pre-requisite for courses 16 and 17. Course 1 and courses 16 or 17 are prerequisites for thesis work in this department.

For Undergraduates.

1. General Bacteriology. Lectures. A survey of the entire field of bacteriology. Given in the College of Letters and Science. Required of junior agricultural students. *First semester; M., W., F., at* 11. *Five-fifths credit.* Professor RUSSELL and Assistant Professor FROST.

For Undergraduates and Graduates.

16. Dairy Bacteriology. A study of bacteria in relation to dairy processes, including the production of milk, butter and cheese, also action of disease bacteria in milk. Lectures, assigned literature, and laboratory work. *Second semester; five-fifths credit.* Professor RUSSELL and Mr. HASTINGS.

17. Agricultural Bacteriology. Embraces a consideration of bacteria as applied to agricultural processes, including their relation to soils, diseases of plant and animal life, and to dairying. Lectures and laboratory work. *Second semester; five-fifths credit.* Professor RUSSELL and Mr. HASTINGS.

Primarily for Graduates.

18. Bacteriology of Special Dairy Problems. Exceptional opportunities are offered for a combination of laboratory work with the practical problems relating to milk production and its manufacture in the dairy. Laboratory work, assigned literature, and conferences. *Throughout the year.* Professor RUSSELL and Mr. HASTINGS.

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19. Bacteriology of Animal Diseases. Special problems on bacterial diseases of animals. Laboratory work, assigned literature, and conferences. *Throughout the year.* Professor RUSSELL and Mr. HASTINGS.

AGRONOMY.

ASSISTANT PROFESSOR MOORE AND MR. STONE.

Primarily for Undergraduates.

As a prerequisite, the student should first complete Biology, course 1, and Vegetable Physiology, course 17, department of Botany. In addition to receiving theoretical instruction, students will assist, so far as practicable, in the various operations of the department, including plant-breeding, testing new varieties of farm cereals and forage plants, cultural methods, etc.

1. Cereals and Forage Plants. Includes a systematic study of plant-breeding as now being developed in America, also a a careful study of Indian corn and the other leading cereals grown in Wisconsin. In a minor way the seeding, cultivation, and harvesting of crops will receive attention, as will also the production of the leading forage plants, particularly alfalfa and other promising legumes. *Three times a week throughout the year.*

FARM ENGINEERING.

ASSISTANT PROFESSOR KNAPP AND ASSISTANT OCOCK.

Courses 1 to 4 are designed to cover many of the problems, both general and specific, that arise in connection with farm buildings and fences. Courses 5 to 10 aim to give such instruction in farm machinery as will enable the operator to obtain the maximum efficiency and durability from each machine. It is assumed that the student brings to the work a fund of actual experience; in addition to this the following prerequisites are needed: Mechanical Drawing 1 (in the Mechanical Engineering course) is a prerequisite to all farm engineering courses. Physics 4 (Analytical Mechanics) and Shop Work 1 are prerequisites to courses 2 and 3. For courses 5 to 10 the prerequisites are Physics 4, Shop Work 1, 2, and 3, and Forge Work. Course 10 requires in addition to these above enumerated, course 1 in Steam Engineering (Thermodynamics). Course 7 is a prerequisite to course 8.

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Primarily for Undergraduates.

1. Drawing. The plotting of farms, arrangement of fields, and the location of building sites. *One lecture and one two-hour drawing period a week, supplemented by field work. Second semester.* Assistant Professor KNAPP.
2. Rural Architecture. Arrangement of farm buildings with reference to sanitation and convenience, rural water system, heating and ventilation of farm buildings. *One lecture and two two-hour drawing periods a week. First semester.* Assistant Professor KNAPP.
3. Materials of Construction. Testing of materials, designing of barn frames in timber or plank, building plans and specifications. *One lecture and two two-hour periods in drawing or laboratory work.* Assistant Professor KNAPP.
4. Cement Work. Concrete construction as applied to stable floors, walls, and posts, feeding floors, water tanks, fence posts, manure pits, etc. *Eighteen lectures and seventy-two hours' laboratory work; first semester.* Assistant Professor KNAPP.
5. Farm Machinery. Tillage machinery including plows, harrows, and cultivators. *Eighteen lectures and thirty-six hours' laboratory work. Second semester.* Mr. OCOCK.
6. Planting, Seeding, and Transplanting Machinery. *Eighteen lectures and seventy-two hours' laboratory work. Second semester.* Assistant Professor KNAPP and Mr. OCOCK.
7. Harvesters, Mowers, and Hay Tools. *Eighteen lectures and seventy-two hours' laboratory work. First semester.* Assistant Professor KNAPP and Mr. OCOCK.
8. Expert Work in Harvesting Machines. *Eighteen lectures and seventy-two hours' laboratory work. Second semester.* Mr. OCOCK.
9. Threshing Machinery. Grain separators, corn huskers, shredders, and clover hullers. *Eighteen lectures and seventy-two hours' laboratory work. First semester.* Mr. OCOCK.
10. Farm Motors. *Eighteen lectures and seventy-two hours laboratory work. Throughout the year.* Assistant Professor KNAPP and Mr. OCOCK.
11. Road Building. The laying out and construction of highways. *Eighteen lectures and thirty-six hours' laboratory work. First semester.* Assistant Professor KNAPP.

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Primarily for Graduates.

(Open to juniors and seniors of the Mechanical Engineering Course, and to other undergraduates having equivalent prerequisites.)

12. Rural Architecture. The standard purity for air, the proper dimensions of ventilator flues, modern methods of insulation, considered with reference to farm needs and practice. *Three laboratory periods a week. First semester.* Assistant Professor KNAPP.

14. Rural Water Supply. The adaptability of pneumatic pressure to rural conditions, and its efficiency as a system of fire protection. *One laboratory period a week.* Assistant Professor KNAPP.

16. Farm Motors. A study of the efficiency of windmills, gasoline engines, and traction engines when used under rural conditions. *Three laboratory periods a week.* Assistant Professor KNAPP and Mr. OCOCK.

18. Farm Fences. The composition, manufacture, and durability of steel wire fences. The relative value of cement and chemically prepared wood as a material for fence posts. *Three laboratory periods a week.* Assistant Professor KNAPP.

19. Farm Machinery. The design, construction, and efficiency of plows, planters, harvesters, grain binders, grain separators, etc. *Five laboratory periods a week; throughout the year, with one season of field work.* Mr. OCOCK.

AGRICULTURAL ECONOMICS.

DR. TAYLOR.

26. The Elements of Agricultural Economics. This course treats of those economic principles which underlie the prosperity of the farmer and of all other classes in so far as they are dependent upon agriculture. The subject is divided into two parts. Part one considers the point of view of the farmer, and the discussion centers about those economic principles which underlie the carrying on of agriculture in such a manner as will enable the farmer to realize the largest net return for his efforts. Part two, from the point of view of the nation as a whole, attempts to discover those economic principles which should guide the agrarian states-

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man in his efforts to conserve and promote the agricultural interests of a country. *First semester; Tu., Th., at* 12.

27. Historical and Comparative Agriculture. This course consists of lectures and assigned readings on the agriculture of the Romans, on the development of agriculture in England and in the United States, and on the present status of agriculture in the most important countries, with an attempt to find the cause of historical changes and geographical differences. *Second semester; Tu., Th., at* 12.

THE SHORT COURSE IN AGRICULTURE.

This course covers two terms of fourteen weeks each, beginning about the first of December, each year.

FIRST YEAR.

Twenty-one lectures in feeds and feeding. Mr. FULLER.

Twenty-eight lectures in the breeds of live stock, with score-card practice additional in stock judging. Mr. FULLER.

Thirty-five lectures, with seventy hours' laboratory practice in agricultural physics. Professor WHITSON and Mr. SANDELL.

Thirty-five lectures, with seventy hours' laboratory practice in plant life. Professor SANDSTEN and Mr. BROWN.

Twenty-four lectures, with clinics, in veterinary science. Professor ALEXANDER.

Twelve lectures in dairying. Professor BABCOCK.

Seventy-two hours' practice in farm dairying and dairy laboratory. Mr. DUKLETH.

A course in farm bookkeeping. Mr. STONE.

Twenty-eight hours of recitation and drill in parliamentary practice. Assistant Professor MOORE.

SECOND YEAR.

Twenty-eight lectures or equivalent in essay writing on feeding farm animals. Professor HENRY.

Twenty-eight lectures in the breeds of live stock, with seventy-two hours' practice in stock judging. Assistant Professor HUMPHREY, Professor ALEXANDER, and Mr. FULLER.

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Seventy hours of lectures and laboratory practice in drainage and meteorology. Professor WHITSON and Mr. SANDELL.

Seventy hours of lectures and laboratory practice in horticulture. Professor SANDSTEN and Mr. BROWN.

Thirty-five lectures and recitations in elementary agricultural chemistry. Professor BABCOCK.

Sixteen lectures in veterinary science, with demonstrations. Dr. ALEXANDER.

One hundred and twenty hours at workbench and forge. Professor KING and assistants.

Seventy hours of lectures and laboratory practice in agronomy. Assistant Professor MOORE and Mr. STONE.

Twelve lectures in agricultural economics. Dr. TAYLOR.

Twenty lectures in bacteriology as applied to agricultural conditions. Professor RUSSELL.

Students completing the studies of this course in a satisfactory manner are granted short course certificates.

An illustrated circular describing the Short Course in detail will be sent on application to Professor R. A. Moore, College of Agriculture, Madison, Wis.

THE WINTER DAIRY COURSE.

The course begins about the first of November each year and lasts twelve weeks. It is open to persons who have had at least six months experience in creamery or cheese factory work.

Instruction in this course in dairying is given as follows:

1. Lectures and class-room work.

Twenty lectures on the constitution of milk, the conditions which affect creaming and churning, methods of milk testing, the preservation of milk, etc. Professor BABCOCK.

Twenty-four lectures on creamery management and accounts. Professor FARRINGTON.

Sixteen lectures on practical cheese making. Mr. CARSON.

Sixteen lectures on the influence of bacteria in the dairy, with demonstrations. Professor RUSSELL.

Lectures on heating, ventilation, and other physical problems directly connected with dairy practice. Assistant Professor KNAPP.

Sixteen lectures and demonstrations on the care and manage-

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ment of the boiler and engine. Assistant Professor THORKELSON.

Eight lectures on the feeding and management of dairy stock. Professor HENRY.

Eight lectures on breeding and selection of dairy stock. Assistant Professor HUMPHREY.

Eight exercises in parliamentary practice. Assistant Professor MOORE.

2. Milk testing. This embraces instruction in the laboratory in estimating the fat and other constituents in milk, butter, and cheese by methods adapted to the factory and factory operators. *Fifteen hours a week.* Professor FARRINGTON and assistants.
3. Butter Making. Butter making is carried on daily on the creamery plan. The student learns to operate the modern forms of power centrifugal separators and pasteurizing machines. They attend to the ripening of the cream, churning, and packing butter, carrying on all the operations as they would be conducted in a creamery. *Fifteen hours a week.* Professor FARRINGTON and assistants.
4. Cheese Making. In this course daily instruction is given in the manufacture of Cheddar cheese, the operations being carried on as in the regular factory, the students being required to take careful notes and make reports upon the process. Special instruction is also given in the making of Swiss, brick, and Limburger cheese. *Sixteen hours a week.* Mr. CARSON and Mr. MARTY.
5. Dairy Machinery. This course provides instruction in firing and caring for boilers, running engines, putting up shafting, cutting and fitting iron pipe, belt lacing, soldering, etc. *Twenty hours a week.* Professor FARRINGTON and assistants.

THE SUMMER DAIRY COURSE.

In the summer course in dairying the student may enter at any time after March 1st, and remain for an indefinite period. No previous preparation is required. The student will assist in all of the different operations of the University creamery, thus gaining much practical experience. Laboratory exercises and theoretical instruction will be given as required.

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Examinations and Certificates.

To secure a dairy certificate a student must have spent a full term in the Dairy School and successfully passed all examinations; and, further, he must have had not less than two seasons' experience in a creamery or cheese factory, one of which must follow the period spent in the Dairy School. During the second season the candidate will report the operations of his factory monthly on blanks, and have his work inspected by an authorized agent of the University.

An illustrated circular giving additional information concerning the Short Winter and Summer dairy courses will be sent on application to Professor E. H. Farrington, Madison, Wis.

FARMERS' COURSE.

Instruction in the farmers' course includes two lectures daily, for two weeks, by professors and instructors connected with the College of Agriculture. The remainder of the day is devoted to instruction in corn judging and the judging of live stock.

An illustrated circular giving details of the course will be sent on application.

THE AGRICULTURAL EXPERIMENT STATION.

OFFICERS OF THE EXPERIMENT STATION.

CHARLES R. VAN HISE, President of the University.
W. A. HENRY, Director.

S. M. BABCOCK, Assistant Director and Chief Chemist.
F. W. WOLL, Chemist.
H. L. RUSSELL, Bacteriologist.
E. H. FARRINGTON, Dairy Husbandman.
A. R. WHITSON, Agricultural Physicist.
E. P. SANDSTEN, Horticulturist.
R. A. MOORE, Agronomist.
GEO. C. HUMPHREY, Animal Husbandman.

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G. N. KNAPP, Agricultural Engineer.
A. S. ALEXANDER, Veterinarian.
C. W. STODDART, Assistant Agricultural Physicist.
W. J. CARSON, Assistant Dairy Husbandman.
E. G. HASTINGS, Assistant Bacteriologist.
J. C. BROWN, Assistant in Agricultural Chemistry.
G. A. OLSON, Assistant in Agricultural Chemistry.
W. S. BROWN, Assistant in Horticulture.
J. G. FULLER, Assistant in Animal Husbandry.
A. L. STONE, Assistant in Agronomy.
FRANK KLEINHEINZ, Assistant in Animal Husbandry.
JAMES HUTTON, Assistant in Animal Husbandry.
C. J. MCCOMB, Assistant in Animal Husbandry.
A. OLIVER, Assistant in Animal Husbandry.
HARVEY SANDELL, Assistant in Agricultural Physics.
LESLIE H. ADAMS, Farm Superintendent.
IDA HERFURTH, Executive Clerk.
SOPHIE M. BRIGGS, Librarian.

The purpose of the Experiment Station is the promotion of agricultural science by investigation and experimentation. In the choice of subjects it endeavors to select those which possess the greatest importance to the farmers of Wisconsin, so far as the facilities at hand permit. The endeavor at all times is to give the investigations a fundamental character in order that the results may be real contributions to agricultural science. The station is also a means of disseminating general and miscellaneous information on agricultural topics, and its staff cheerfully devotes the necessary time to private and public correspondence and to personal interviews.

By the direction of the general government, which supplies a portion of the funds for maintaining the Station, there are issued an annual report and frequent bulletins. Twenty-one reports and 118 bulletins have been issued to date. Fifteen thousand copies of the reports are printed annually, and the edition of the bulletins comprises from 5,000 to 25,000 copies. These bulletins and reports are free to all residents of the State upon application. The station mailing list now embraces about 15,000 names of farmers and others to whom the reports and bulletins are regularly sent.

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FARMERS' INSTITUTES.

INSTITUTE STAFF.

GEORGE MCKERROW, Superintendent.
NELLIE E. GRIFFITHS, Clerk and Stenographer.

INSTITUTE CONDUCTORS.*

Corps No. 1—W. C. BRADLEY, Hudson.
Corps No. 2—L. E. SCOTT, Neenah.
Corps No. 3—F. H. SCRIBNER, Rosendale.
Corps No. 4—DELBERT UTTER, Caldwell.

REGULAR ASSISTANTS.*

GEORGE C. HILL, Rosendale.
D. B. FOSTER, Fairchild.
DAVID IMRIE, Roberts.
L. P. MARTINY, North Freedom.

OTHER ASSISTANTS.*

C. P. GOODRICH, Fort Atkinson.
THOMAS CONVEY, Ridgeway.
A. A. ARNOLD, Galesville.
C. E. MATTESON, Pewaukee.
N. E. FRANCE, Platteville.
E. C. JACOBS, Menomonie.
R. E. ROBERTS, Western Union.
MRS. ADDA F. HOWIE, Elm Grove.
H. M. CULBERTSON, Medina.
JOHN L. HERBST, Sparta.
E. L. ADERHOLD, Neenah.
MRS. HELEN ARMSTRONG, Chicago.

The third division of work of the College of Agriculture is the instruction of farmers who are unable to come to the University for study. This is made possible through generous legislative provisions, by which a carefully supervised system of farmers' institutes is maintained. The institutes are in immediate charge of a superintendent, who elaborates and controls the organization and maintenance of the institutes. He is aided by special conductors who assist in perfecting details and carrying the whole into effect. Members of the agricultural faculty render as much assistance as is consistent with their other duties. Experts in different departments are engaged to present special important themes. Lecturers are often brought from other states to treat on specific topics in which they are recognized authorities. Local talent is used to some extent and not the least of the educational

*Appointed each year.

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benefits is the development of latent ability in writing, speaking, and experimenting which has followed as a natural result from the interest awakened by this important stimulus.

During the institute season of 1904-05 one three-day, and eighty-two two-day institutes will be held at as many places in the state. Cooking schools will be held at nine points.

How to Secure an Institute.

Institutes are placed for the most part in localities which show the greatest interest in this movement. Application for institutes will be received by the superintendent and presented to the agricultural committee not later than Sept. 30. The committee goes over the list and carefully considers the needs and interests of each locality, and places the institutes where, in its judgment, they will prove the most helpful. In the past there have been more applications for institutes than it was possible to supply. Applications should be received before Sept. 15 each year.

The Farmers' Institute Bulletin.

To disseminate still more widely the best matter presented and discussed at the institutes, and to give such material permanency for its own sake and for its historical value, a bulletin giving a stenographic report of the closing institute of each year is issued. Bulletin No. 18 contains a stenographic report of the closing institute held at Kaukauna in March, 1904. Sixty thousand copies of this bulletin have been issued. Eight thousand cloth bound copies will be placed in the school district libraries of the state; 35,000 will be given to the farmers in attendance at the institutes, and the remainder distributed through cheese factories, creameries, etc. Copies will be sent to all applicants living within the state, upon receipt of 10 cents to pay postage and mailing, if paper covers are desired, and 25 cents for cloth-bound covers. To those outside of Wisconsin, 25 cents for paper-covered and 40 cents for cloth-bound copies will be charged, to cover mailing and cost of publication.

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THE SCHOOL OF MUSIC.

STAFF OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
F. A. PARKER, *Director*, Musical History, Harmony, Counterpoint.

ADA BIRD, Piano.
ALICE REGAN, Piano.
INGA SANDBERG, Piano,
WINIFRED CARD CURTIS, Piano.
MARY MAUD FOWLER, Piano.
ADELAIDE FORESMAN, Voice.
ELIAS A. BREDIN, Voice, Organ, and Theory.
MARGARET DANIEL, Voice.
CHARLES NITSCHKE, Violin, 'Cello, and Other Orchestral Instruments.
ELIZABETH KEELEY ANDERSON, Harp.
FRANK CHARLES BACH, Mandolin.
MRS. MARY E. BRAND, Guitar and Banjo.
HERMAN E. OWEN, Public School Music.
BESSIE BRAND, Secretary.

General Announcement.

It is the purpose of the School of Music to furnish superior facilities for the study of music in any or all of its departments, theoretical, or practical. Instruction is offered in piano, organ, harp, singing, orchestral instruments, mandolin, guitar, and banjo, and in musical theory, choral practice, harmony, counterpoint, composition, and methods in public school music. In the study of piano or singing (voice culture) instruction is given by means of private or individual lessons, or, should a sufficient number of students desire it ,classes limited to three will be organized. In the study of other instruments, private lessons only are employed. In the theoretical studies students are recommended to join the University classes, but private lessons may be arranged for if preferred.

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To meet the convenience of students residing either permanently or temporarily in distant parts of the city, an office and studios are provided in the Kroncke building, in addition to those in Assembly Hall at the University. Applications for lessons may be made at either place, the lessons being given where it is found to best suit the convenience of instructor and student.

The lessons vary in length and number per week, for the purpose of adequately meeting the wants of all classes of students, from those who take a large amount of work in other departments of the University to those who devote themselves especially to the study of music with little or no collateral work. In like manner the fees for special instruction vary according to the length and frequency of lessons. A schedule of fees may be found on p. 81.

It should be observed that special instruction in vocal or instrumental music of any kind may be taken by students not otherwise connected with the University, and that such students are not required to pay the incidental fee.

The general classes in musical theory, harmony, counterpoint, history of music, and musical composition may be taken as electives by students of the College of Letters and Science, who will receive credit for them, as for other studies. These classes are likewise open to students of the other colleges and schools of the University without extra fees.

Students of the School of Music, not otherwise connected with the University, may be admitted to these classes on the payment of the usual incidental fee charged to students of the College of Letters and Science ($10 per semester). The tuition fee required for students in the University who are not residents of the state is not required in the School of Music.

A statement of courses and classes follows. For a statement of credits, see announcements under Music, p. 189.

COURSES OF THE SCHOOL.

There are two general courses in the School of Music, viz.: (1) The collegiate course, and (2) the academic course.

I. The Collegiate Course.

In this course the requirements for admission are the same as for the general courses in the College of Letters and Science, or

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for adult special students, together with such proficiency in some department of music, as is stated in connection with the outlined courses of study. A graduate's diploma will be granted on the completion of this course. Four years of study are required, including the courses in musical theory, harmony (one year), and history of music, or their equivalents.

II. The Academic Course.

This course is open to persons not members of the University, and also to University students who do not desire to enter the collegiate course pursuant to graduation. Students of this course may, however, be admitted to the musical classes of the University on the payment of the usual incidental fees charged to students of the College of Letters and Science ($10 per semester), but will not be considered candidates for graduation or for a diploma. If, however, at any time, such students should be transferred to the collegiate course, they will, on satisfying other conditions, receive credit for studies previously taken. A certificate of excellence will be granted to worthy students of this course on examination, after not less than three years of study.

THE COURSES OF STUDY.

I. COLLEGIATE COURSE.

PIANO.

The courses in Piano and Singing have been re-arranged to cover a period of four years instead of three. This, however, does not apply to students who entered before September 1904. Such students may refer to the University catalogue for 1903-04.

Applicants for admission will be expected to play music of the grade of Mozart's *Sonata in D major No. 13*, Peters Edition; Loeschorn, *Op. 52 and Op. 66;* Bach, *Little Preludes.*

FIRST YEAR.

Heller, *Op. 46 and 45;* Czerny, *Studies in Velocity;* Jensen, *Op. 32;* Bach, *Inventions* and *English Suites.*

SECOND YEAR.

Bach, *Well-Tempered Clavichord;* Kullak, *Octave School,* Books I and II; Cramer, *Studies;* Czerny, *Fingerfertigkeit;* Marmontel, *Mecanisme.*

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THIRD YEAR.

Tausig, *Studies;* Kullak, *Book III; Gradus ad Parnassum,* 1st half; Czerny, *Toccata;* Chopin, *Preludes.*

FOURTH YEAR.

Moscheles, *Op. 70; Gradus ad Parnassum,* 2nd half; Chopin *Etudes.*

It is not supposed that a rigid course can be given which will meet the requirements of individual students, but the foregoing outline represents, in a general way, the character of each year's work. Etudes especially are named, because they indicate grade and character of requirements more clearly than can be done otherwise. On the other hand, these studies are supplemented by ample selections from classic and modern authors for use in the parlor or concert room.

Upon graduation students will be expected to play acceptably from memory selections of the grade of Chromatic Fantasie and Fugue by Bach, Sonata op. 90 by Beethoven, Concerto in G minor (one movement) by Mendelssohn, La Fileuse by Raff, and Second Rhapsody by Liszt.

ORGAN.

No previous knowledge of organ playing is required. The student must be well grounded in piano playing, be possessed of a correct technique, and be able to read plain four-part music.

The course of study is continuous, beginning with Stainer's *Organ School* or Whiting's *First Six Months on the Organ,* and following with the larger works of Rink and Best, supplemented by special studies by Thayer, Buck, Ritter, Schneider, Volckmar, and others. Selections from Bach's organ works, Mendelssohn's Sonatas and the compositions of modern composers are used.

Careful training is given in playing church music and voluntaries, the use of stops, and the mechanism of the instrument.

VOICE.

The student must be able to read plain music and must have had an amount of training equal to the first half of Concone's *Fifty Lessons,* and comprising the usual technical study for the same period.

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First Year: Tone Placing, Breathing, and Phrasing; Ballad Singing and the Sostenuto style; Technical and other studies of the grade of Bonaldi's *Six Vocalises*, Siebers *Vocalises;* Marchesi's *Exercises, Op.* 21, Book I.

Second Year: Concone's *Fifteen Vocalises;* Schubert's *Manual of Vocal Technique;* Marchesi's *Vocalises, Op.* 21, Book II; German and French songs, and easy oratorio and operatic arias, and recitatives.

Third Year: Schubert's *Special Studies;* Bordogni's *Bravura Studies*, and operatic and oratorio selections.

Fourth Year: Studies in bravura by Lamperti and Bordogni Cadenzas and larger forms of execution.

On graduation the student will be expected to sing acceptably selections (according to voice and school) from such songs and arias as: "He Was Despised," "Angels Ever Bright and Fair," "I Know That My Redeemer Liveth," and "Thou Shalt Break Them," by Handel; "With Verdure Clad," "Rolling in Foaming Billows," and "In Native Worth," by Haydn; "If With All Your Hearts," "It is Enough," and "O Rest in the Lord," by Mendelssohn; "Infelice," by Verdi; "Roberto, tu che Adoro," by Meyerbeer; "Una Voce," and "Pro Peccatis," by Rossini.

VIOLIN.

First Year: Hermann, *Scale Studies.* Kayser, *Violin Instructor, I and II.* Herbert Ries, *Violin School, Part I.* Easy melodious solos.

Second Year: Kayser, *Violin Instructor, III.* Kayser, *Etudes, Op.* 29. Schubert, *Violin School, IV.* Herbert Ries, *Violin School, Part III.* Solos by *Viotti, Rode, De Beriot.*

Third Year: Schradieck, *Violin Technic.* De Beriot, *School Part II. Etudes* by Dont, Kreutzer, and Schubert.

Solos by De Beriot, Leonard, Vieuxtemps, and Wieniawski.

THEORETICAL STUDIES.

MUSICAL THEORY AND CHORAL PRACTICE.

A one year course, twice a week, in the general theory of music, including notation, scale construction, intervals, distinctions of rhythm, etc., combined with a practical study of sight reading and choral singing.

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This course is especially recommended to all students, whether of instrumental or vocal music, as furnishing a substantial foundation for all other work; it will also be found useful for those who contemplate teaching in public, or similar schools.

HARMONY AND COUNTERPOINT.

The student must be able to read and play simple four-part music.

First year: Review of scales, and intervals, triads, seventh chords, augmented sixth chords, modulation, synopsis of suspension and appoggiatura.

Second year: Detailed treatment of modulation, suspension, appoggiatura, etc. Harmonizing melodies. Simple strict counterpoint.

Third year: Double counterpoint, canon and fugue.

HISTORY OF MUSIC.

A course of lectures twice a week, extending through the year. In the first semester the lectures give a general survey of music before the Christian era, and down to the eighteenth century.

The second semester is devoted to the eighteenth and nineteenth centuries.

MUSICAL COMPOSITION.*

A year course, twice a week. One year of harmony is required as preparation.

PUBLIC SCHOOL MUSIC.

Two courses in public school methods as applied to music are offered by Mr. Herman Everett Owen. The first is designed for teachers who will combine the teaching of other branches with the subject of music, in grade and high schools. The class will meet once a week throughout the year. To accommodate teachers in public schools who may desire to take the course, the class will meet on Saturday, the hour to be arranged at the beginning of the year. The fee for this course will be $5 a semester.

*The courses in counterpoint, etc., and in musical composition are inserted here under their proper headings, because they are frequently taken as electives, but they represent graduate work for the students of the School of Music.

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The second course is designed for those who wish to fit themselves for the special work of supervisor of music in public schools. This class will meet three times a week throughout the year. Fee $20 a semester.

Both of these courses deal with the matter to be presented and the method of presenting it.

II. ACADEMIC COURSE.

There are no requirements for entrance. Students are received and graded according to ability and amount of previous study. This course in all departments leads up to and overlaps the collegiate course. Students after reaching the proper stage of preparation may be tranferred to the collegiate course, or may remain in the academic course, the work of the last three years being identical in both courses. But no certificate of excellence will be issued to any student who is not thoroughly fitted to enter the second year of the collegiate course.

GUITAR, BANJO, AND MANDOLIN.

In response to the demand growing out of the popularity of these attractive instruments, the School of Music provides ample and excellent opportunities for their study. Special attention is given to expression, technique, and proper fingering. In general, correct methods leading to the highest efficiency are employed.

Text-books for Guitar: Carcassi, Sor, Ferranti, Holland, and Langley.

Text-books for Banjo: Dobson, Stewart, Henning, and others.

Text-books for Mandolin: School of Wessenberg, and Progressive Studies by Guiseppi, Branzoli, supplemented by solo selections.

ORCHESTRA.

Should a sufficient number of students present themselves for this purpose at the beginning of the year, an orchestra will be organized and a rehearsal will be held each week. It is open to all students who have sufficient knowledge of any orchestral instruments to pursue the work profitably.

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BAND.

A military band has been organized, open to all students. Two rehearsals are held each week. Freshmen and sophomores belonging to the band are exempt from military drill.

CHORAL UNION.

The Choral Union is an organization of students of the University and citizens of Madison for the purpose of studying the oratorios and larger choral work of ancient and modern authors, interspersed with lighter part-songs and glees, and of adequately presenting the same in public performance. Very successful performances of Handel's *Messiah* and *Judas Maccabaeus*, Haydn's *Creation*, and Mendelssohn's *Elijah* and *St. Paul* have been given, and other works of similar magnitude will follow.

Applicants for membership are expected to be able to read plain music at sight. The rehearsals are held weekly from October until May. The annual membership fee is one dollar.

RECITALS AND CONCERTS.

Student recitals, free to all students, and open to all others by invitation, are held at intervals during the collegiate year. Recitals and concerts by eminent artists are given from time to time at a low price to students of the School of Music.

Tuition.

The school year is divided into two semesters of eighteen weeks each, but the tuition for musical instruction may be paid by the half-semester.

Half-Semester of Nine Weeks.

Two Lessons a Week.

PIANO.

	½-hour lessons.	¾-hour lessons.	Hour lessons.
*Miss Bird	$18.00	$25.00	$30.00
Miss Regan	18.00	25.00	30.00
Mrs. Sandberg or Mrs. Curtis	13.50	20.00	25.00
Miss Fowler	12.00	16.00	20.00

*Former pupils of Miss Bird will be received at the same rate as heretofore.

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VOICE.

Miss Foresman	$18.00	$25.00
Miss Daniel, or Mr. Bredin	13.50	20.00

ORGAN.

Mr. Bredin	$13.50	$20.00	$27.00

VIOLIN, GUITAR, BANJO, HARP.

Mr. Nitschke, Mrs. Brand, Mrs. Anderson	$ 9.00	$13.50	$18.00

MANDOLIN.

Mr. Bach	$ 6.00	$ 9.00	$12.00

One Lesson a Week.

PIANO.

	½-hour lessons.	¾-hour lessons.	Hour lessons.
Miss Bird	$10.00	$13.50	$17.00
Miss Regan	10.00	13.50	17.00
Mrs. Sandberg, or Mrs. Curtis	7.50	11.00	13.50
Miss Fowler	7.00	10.00	12.00

VOICE.

Miss Foresman	$10.00	$13.50
Mr. Bredin, or Miss Daniel	7.50	11.00

ORGAN.

Mr. Bredin	$ 7.50	$11.00	$13.50

VIOLIN, GUITAR, BANJO, HARP.

Mr. Nitschke, Mrs. Brand, Mrs. Anderson	$ 4.50	$ 6.75	$ 9.00

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MANDOLIN.

Mr. Bach	$ 3.60	$ 5.40	$ 6.75

Diploma Fee, $5.00.

PUBLIC SCHOOL MUSIC.

Public School Methods, for grade teachers, per semester....$ 5.00
Public School Methods, for supervisors, per semester..... 20.00

Theoretical studies may be taken in the University classes, and those who are not otherwise connected with the University are expected to pay the incidental fee of the College of Letters and Science which is $10.00 a semester. The fee, however, is not required of those taking only individual lessons in singing, or on some instrument.

Students are not received for less than half a semester except by permission of the Director of the School of Music. Students are expected to pay the tuition fees by the half semester or semester in advance.

No student is entitled to lessons until tuition has been paid.

No deduction can be made for absence from lessons, except for long continued illness, in which case the School of Music will share the loss equally with the student.

No student is expected to take part in any public entertainment without the consent of his teacher and the Director.

Students who, by reason of deficient musical ability, neglect of study, or any other valid reason, fail to make satisfactory progress, may be dropped from the classes.

The pianos in Music Hall may be used for practice for a limited number of hours daily by students of the University on payment of a fee of from four dollars to ten dollars per semester. Pianos may be rented from dealers at from three to six dollars a month.

The office of the Director in Assembly Hall at the University will be open for several days before the opening of each semester for the reception of pupils and assignment of lessons. After the opening of the University the Director may be found daily at Assembly Hall, from 10 to 11, or at the office in the Kroncke building from 9 to 10.

For further information, address

F. A. PARKER, Director, 14 W. Gilman St., or
MISS BESSIE BRAND, Secretary School of Music,
Madison, Wis.

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THE WASHBURN OBSERVATORY.

STAFF.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
GEORGE C. COMSTOCK, Ph. B., LL. B., Director, and Professor of Astronomy.

ALBERT S. FLINT, M. A., Astronomer.
WILLIBALD WENIGER, Student Assistant, Time Service.
HELEN FLINT, Student Clerk.
EDWARD J. FILBEY, Student Assistant, Meteorology.

The Washburn Observatory was established in the year 1878 through the munificence of the late Gov. C. C. Washburn. Although its obligations and opportunities as a branch of a teaching university have not been ignored, the energies of its staff from the beginning have been directed mainly to astronomical research. Among the lines of research that have been cultivated may be specified the measurement of the positions and motions of the heavenly bodies, the discovery and measurement of double stars, the investigation of variable stars, the study of changes of latitude and of the amount and character of the atmospheric refraction, the determination of the amount of the aberration of light, problems of stellar color, proper motions of faint stars, and a systematic investigation of the parallaxes of all accessible stars which have large proper motions. The observatory also maintains a tri-daily meterological service.

The principal instruments of the observatory are:

An equatorially-mounted telescope of 15½ inches aperature, constructed by Alvan Clark & Sons, and provided with graduated circles, driving clock, a filar micrometer, double image micrometer by Steinheil, a spectroscope, astro-photometer, and a very complete set of eye-pieces. A meridian circle, by A. Repsold & Sons, of Hamburg, with collimators, transit micrometer, and the usual accessories of such an instrument. The objective of the instrument was made by the Clarks, and has an aperture of 4.8 inches

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and a focal length of 58 inches. The circle is graduated to 2 minutes of arc. For several years this instrument has been employed for an extensive series of determinations of stellar parallax. There are also a sidereal clock by Hohwü, of Amsterdam, two mean time clocks by Howard, of Boston, all excellent time-pieces, and a chronograph, by Fauth & Co., of Washington.

In the Student's Observatory are mounted a six-inch equatorial telescope, by Alvan Clark & Sons, and a transit instrument of the broken telescope type, by Bamberg. These instruments, while primarily intended for instruction, are well adapted to and are employed for certain classes of original work. In particular, the equatorial telescope has been provided with reflecting prisms (Lowey), and employed as one of the principal instruments of the observatory in an investigation of the refraction and the constant of aberration, and the Bamberg instrument is used for latitude determinations by the Talcott method and for the time service of the observatory. The observatory also possesses a considerable number of subsidary instruments, such as portable telescopes, spectroscopes, photometers, chronometers, sextants, an engineer's transit, an altazimuth, a universal instrument of the German type, a personal equation machine, a spherometer caliper, seismoscopes, photographic apparatus, and a complete set of meteorological instruments.

The Woodman Astronomical Library, established in connection with the observatory, and supported from the income of a fund given by the late Cyrus Woodman, Esq., possesses a large and valuable collection of works upon astronomy and kindred subjects.

By provision of law the results of important investigations conducted at the Washburn Observatory are published by the State, and under this provision eleven volumes, representing the more important work done at the observatory, have been issued.

Students of sufficient technical attainments are admitted to the observatory and take part in the investigations in progress. Meritorious original work of such students may be included in the Publications of the Observatory, or in the Bulletins of the University. The courses of instruction in astronomy are stated upon page 171.

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UNIVERSITY EXTENSION.

STAFF.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
A. W. TRESSLER, A. B., Secretary, and Inspector of Schools.

T. S. ADAMS, Ph. D., Assistant Professor of Political Economy.
E. D. ANGELL, Instructor in Gymnastics.
VICTOR COFFIN, Ph. D., Assistant Professor of European History.
G. C. COMSTOCK, Ph. B., LL. B., Professor of Astronomy.
J. C. ELSOM, M. D., Professor of Physical Training, and Director of the Gymnasium.
J. C. FREEMAN, LL. D., Professor of English Literature.
W. F. GIESE, A. M., Associate Professor of Romance Languages.
C. H. HANDSCHIN, Ph. D., Instructor in German.
A. R. HOHLFELD, Ph. D., Professor of German.
H. H. JACOBS, A. B., Warden, University Settlement, Milwaukee.
LOUIS KAHLENBERG, Ph. D., Professor of Physical Chemistry.
F. W. MEISNEST, Ph. D., Instructor in German.
B. H. MEYER, Ph. D., Professor of Political Economy.
J. E. OLSON, B. L., Professor of the Scandinavian Languages and Literature.
M. V. O'SHEA, B. L., Professor of the Science and Art of Education.
J. F. A. PYRE, Ph. D., Assistant Professor of English Literature.
P. S. REINSCH, Ph. D., Professor of Political Science.
H. L. RUSSELL, Ph. D., Professor of Bacteriology.
F. C. SHARP, Ph. D., Associate Professor of Philosophy.
GRANT SHOWERMAN, Ph. D., Assistant Professor of Latin.
C. F. SMITH, Ph. D., Professor of Greek and Classical Philology.
S. E. SPARLING, Ph. D., Assistant Professor of Political Science.

Lectures.

University extension is a term for instruction offered at a distance from the University, by means of lectures delivered in per-

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son by University instructors, on subjects which they treat in their regular classes.

Under the system adopted by the University, the regular University extension lectures are delivered in courses of six. Single lectures are also delivered by the regular staff and by a number of professors and instructors. This arrangement is a modification of our regular extension courses, and may be available under conditions where regular extension courses cannot be established.

A printed syllabus, free to each student, will give an epitome of the subject considered, an analysis of each lecture, references to the best books on the subject, and other helpful suggestions.

The class, which is held before or after each lecture, furnishes the student an opportunity to question the lecturer and to have special difficulties explained. In the class, the lecturer will take the opportunity to elaborate his subject or to emphasize its salient features.

The lecturer will hold at the end of the course a written examination which may be taken only by those who have attended the lectures and classes, read the required books, and sent in the required papers. To such as comply with these requirements and pass the examination, the University will award a certificate having a recognized value on the University records and credited accordingly, should the holder ever study at the University.

Expenses.

The expenses of a course consist of local expenses and the charges of the University. Under the former head are included hall rent, printing, advertising, etc., which are managed by the local center, and which vary, of course, in different towns and circumstances. Often a church or school hall may be obtained for the lecturers without expense.

The charges of the University consist of:—

1. A fee of $100 for a course of six lectures.

2. The lecturer's traveling expenses, including sleeping-car and meals, when necessary. In the case of a circuit, the lecturer's traveling expenses are divided equally among the centers forming the circuit.

3. The lecturer's hotel bill. Where the lecturer is entertained by members of the local center, this item disappears.

4. If lantern illustrations are given, the actual cost will be paid by the local center.

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LECTURE COURSES OF 1904-1905.

Professor M. V. O'SHEA. Applied Psychology and Child-Study; Lessons from the Masters.

Associate Professor F. C. SHARP. Problems of Moral Progress.

Assistant Professor T. S. ADAMS. Porto Rico under Spanish and American Government; Labor Problems; Problems in Taxation.

Assistant Professor S. E. SPARLING. The Modern City and Its Problems; American Political Parties and their Relation to Government.

Assistant Professor VICTOR COFFIN. The Transition from the Old Regime to the Nineteenth Century; The Political Development of the Chief European States in the Nineteenth Century.

Professor P. S. REINSCH. The Constitution and the Founding of the Federal Government; The Statesmen of the Civil War; Contemporary World Politics; Historical Towns and Sites of Italy.

Professor J. C. FREEMAN. English Life and Literature; Shakespeare; The Great Epics of the World; American Life and Letters.

Assistant Professor J. F. A. PYRE. American Writers and American Culture; Typical English Poems; Art and Life.

Associate Professor GIESE. The French Classic Poets; The Skeptical Movement in French Literature from the Renaissance to the Nineteenth Century.

Professor A. R. HOHLFELD. Epochs of German Literature; Goethe: The Man and the Poet.

Dr. F. W. MEISNEST. Schiller.

Dr. C. H. HANDSCHIN. The Development of the German Novel.

Assistant Professor SHOWERMAN. Greek Art; Historic Sites of Greece; Historic Sites of Italy; The Remains of Ancient Rome; Roman Life.

Professor J. E. OLSON. Early Scandinavian History and Literature.

Professor H. L. RUSSELL. Microbes and their Work.

Professor LOUIS KAHLENBERG. Chemistry.

Professor J. C. ELSOM. Physical Training.

Mr. E. D. ANGELL. The Educational Value of Play; The History and Development of Physical Training.

Rev. H. H. JACOBS. Social Betterment.

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PHYSICAL TRAINING.

DR. ELSOM, MISS MAYHEW, MR. O'DEA, AND MR. ANGELL.

The Gymnasium is one of the largest and best equipped buildings of the kind in the country. Its size is 200 feet in length by 100 feet in width. On the ground floor are found the offices of the Director and of the Commandant; a large lecture and gun room; the locker room, containing 900 lockers; the bathrooms, with shower, tub, and spray baths; and a large natatorium, 20 by 80 feet. On the second floor, in addition to the necessary offices, there is an unobstructed hall, 165 by 98 feet, used for gymnastic exercise and military drill. A complete equipment of the usual developing machines, and gymnastic apparatus of all kinds is supplied. The third floor contains a large baseball cage, six handball courts, two running tracks, and two rifle ranges.

Each student, on entering the department, undergoes a thorough physical examination, in order that his physical condition may be known to the director, and suitable exercise prescribed. Various strength tests and measurements are given; the heart, lungs, and eyes are examined, and the utmost caution used in the advice given regarding individual exercise. One examination during each semester is required, the latter demonstrating any improvement or change in the student's physical condition. Anthropometric cards and charts are platted for students when desired.

Systematic class work in gymnastics is required on two days of the week, of all freshmen and sophomores. This work consists of vigorous drill with dumb-bells, clubs, bar-bells, etc., besides progressive graded work on the various pieces of gymnastic apparatus, and gymnastic games, always under the careful direction of competent instructors.

In the scheme of gymastics, such exercises as are promotive of health, grace, and self-control are sought for rather than heavy and dangerous athletic performances.

Every facility is provided for track athletics, baseball, football, tennis, aquatics, etc. The University owns the large tract known

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as Camp Randall, which is fitted up with two large grandstands, a one-fourth and a one-third mile track, and other necessary features.

During the second semester lectures on the physiology of exercise, personal hygiene, health culture, etc., are given to the freshmen. These lectures are illustrated by various charts, lantern slides, etc., and take the place of the regular gymnasium classes on the days when the lectures are given.

The University is situated on the shores of Lake Mendota, a beautiful sheet of water, which invites to exercise and recreation in boating. The University Boat House Association has erected near the Gymnasium a boat house at a cost of over $4,000.

Gymnastics for Women.

Chadbourne Hall contains a finely equipped gymnasium for the use of the young women attending the University. The room is two stories high, has a floor space of 71 by 40 feet, and is provided with twenty-seven dressing rooms and 128 lockers. The dressing rooms connect with shower baths, supplied with hot and cold water, furnishing ample bathing facilities for those who take gymnastics.

The gymnasium suit requires four yards of double-width (54 in.) dark blue serge, and consists of two pieces, a loose shirtwaist and bloomers. The waist has a sailor collar trimmed with narrow white braid. The Butterick pattern may be used. The suit can be obtained here for $5.00.

The apparatus is complete and varied, consisting of chest weights, dumb-bells, wands, bar-bells, etc., besides a complete outfit of Swedish apparatus and other forms of appliance for development and physical improvement. Music is used in all class drills.

The main objects of the training for women are the acquiring and maintaining of good health and the producing of a good physical foundation for mental activity. Other results are poise, control, grace, and development.

Each student will undergo a careful physical examination on entering the department, in order that the physical condition may be known, and suitable exercise prescribed for individual cases. A second examination is given during the second semester, in order that the improvements and benefits of the course of exercise may be shown.

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The work is required of all freshman and sophomores students. The freshmen are required to meet in the gymnasium on the first Thursday of the college year at 4 o'clock. Sophomores will meet on the same day at 5 o'clock.

The Women's Athletic Association is maintained to further all out-door sports; tennis, rowing, field hockey, basketball, cross-country walking, etc.

Course in Teachers' Gymnastics.

A class in theory of physical training and in practice of teaching gymnastics meets once a week during the year. The credit given is one-fifth a semester.

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MILITARY SCIENCE AND TACTICS.

CAPTAIN CURTIS, U. S. A.

This department of the University is maintained in accordance with state and federal laws. By the regulations of the University, all able bodied male students of the freshman and sophomore classes are required to take military drill.

The work of the department embraces a course in drill regulations, a course of lectures on military subjects, and practical instruction in the school of the soldier, company, and battalion, target practice, artillery drill, and signal drill. The class in drill regulations is organized each year, and may be elected by both classes. All commissioned officers, the sergeant-majors, quartermaster-sergeants, and first sergeants are required to take this course, which continues through the winter. The credit of drill regulations and the lecture course is that of a two-fifths study.

Freshmen who, prior to their entering the University, have received the equivalent of one year's instruction in the University battalion, may, at the discretion of the Commandant, be required to drill one year only, *provided*, that they furnish certificates from the principals of military schools they have attended, or the commanding officers of military companies in which they have served for a year or more as regularly enlisted men or officers, setting forth in detail the military duty performed; and that they take the full course in drill regulations, maintaining a good class standing; except that the Commandant may exercise the further discretion of deferring the required drill of all cadets of such military schools or members of companies to the second or sophomore year. Freshmen or sophomores who, prior to their connection with the University, have served in the army or navy of the United States and been honorably discharged, may receive full credit for drill at the University without further military instruction.

No student is entitled to excuse from drill on the ground of employment unless such employment is necessary for his support. It is not the intention of the University to force students to drill when such action would practically compel the student to leave

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the University. On the other hand, we can not permit students to engage in other occupations which are not necessary for their support and excuse them from drill on the ground that such employment occupies the drill hour. In such a case as that, drill should be regarded in the same way as any other study.

Drills will begin at the opening of the first semester and be held twice a week throughout the year.

Students of the freshman or sophomore classes, who enter, as candidates, the crews and athletic teams recognized by the Athletic Council, may be excused from drill when they are regularly elected to membership in such organizations.

When a member of a crew or an athletic team shall be discharged from such crew or team he will report to the Commandant for drill at the next drill succeeding his discharge.

All appointments to office in the companies shall originate in the sophomore class, but officers may be promoted and continued in office during their junior and senior years.

Students excused from drill will be required to take, before graduation, an additional one-fifth study in the academic course for each semester in which they were excused from drill.

The uniform of the regiment is similar to the fatigue or undress uniform of the United States army, and can be obtained in Madison at a cost of $9.50 to $15.00.

Organization.

The organization is that of a regiment of infantry, consisting of two battalions of three or more companies each, a platoon of artillery, a brass band, a trumpet corps, and signal and target detachments. These organizations will be supplied with a full quota of officers. Students will enter the infantry regiment and afterward be specially assigned to the other organizations at the discretion of the Commandant.

Upon graduation specially qualified students receive from the Governor of Wisconsin commissions of brevet second lieutenants in the State National Guard, subject to assignment to duty for five years after graduation.

ROSTER OF UNIVERSITY CORPS OF CADETS FOR 1904-05.

Commandant.

Captain Charles A. Curtis, U. S. Army, Colonel Wisconsin National Guard.

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Cadet Officers.

REGIMENTAL, FIELD, AND STAFF.

Colonel Charles A. Taylor.
Lieutenant-Colonel Leo M. Cook, Adjutant.
Major Cullen D. Purple, Quartermaster.
Major Albert W. Foster, Inspector.
Second Lieutenant Arthur J. Norris, Asst. Inspector.
Sergeant-Major Hugo C. Ernst.
Corporal Robert A. Wood, Chief Trumpeter.
Drum-Major John D. Jarvis.

FIRST BATTALION.

Major Victor N. Griggs.
Captain Collin W. Wright, Quartermaster.
First Lieutenant DeLancey S. Webb, Adjutant.
Sergeant-Major Earl Pryor.

SECOND BATTALION.

Major Harold K. Weld.
First Lieutenant William K. Winkler, Adjutant.
First Lieutenant Albert A. Johnson, Quartermaster.
Sergeant-Major Rollin E. Roach.

COMPANY OFFICERS.

Company A.
Captain Richard A. Schmidt.
1st Lieut. Edward W. Hoffman.
2d Lieut. Sidney J. Williams.
1st Sergt. Harry C. McLean.

Company B.
Captain George R. Ray.
1st Lieut. Albert W. Lindemann.
2d Lieut. Benjamin F. Bennett.
1st Sergt. Edward J. Oliver.

Company C.
Captain Marcus F. Hoefs.
1st Lieut. Paul W. Hammersmith.
2d Lieut. Harry G. Montgomery.
1st Sergt. Clarence F. Ellefson.

Company D.
Captain Henry C. Duke.
1st Lieut. Walter F. Teschan.
2d Lieut. Harold E. Ketchum.
1st Sergt. Herbert B. Sanford.

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Company E.

Captain George W. Neilson.
1st Lieut. Charles N. Hall.
2d Lieut. Charles E. Inbusch.
1st Sergt. Elmer W. Ellefson.

Company F.

Captain Perry C. Stroud.
1st Lieut. Walter S. Underwood.
2d Lieut. Edmund B. Riley.
1st Sergt. Valentine E. Schrank.

TARGET DETACHMENT.

Major M. E. Wharry.
1st Lieut. James R. Stone. 1st Sergt. Woodward Kirkpatrick

SIGNAL CORPS.

Captain Howard C. Hopson.
1st Lieut. Harold J. Weeks. 2d Lieut. Walter M. Bell.
1st Sergt. John H. Ashum.

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THE SUMMER SESSION.

OFFICERS OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the U
D. C. MUNRO, A. M., Director of the Summer Session.
of European History.

T. S. ADAMS, Ph. D., Assistant Professor of Political
C. R. BARDEEN, M. D., Professor of Anatomy.
D. E. BURCHELL, A. B., Assistant Professor of Busine
tration.
W. B. CAIRNS, Ph. D., Assistant Professor of America
W. H. CARRUTH, Ph. D., Professor of Germanic La
literature in the University of Kansas.
J. C. ELSOM, M. D., Professor of Physical Training,
of the Gymnasium.
R. T. ELY, Ph. D., LL. D., Professor of Political Ec
C. R. FISH, Ph. D., Assistant Professor of America
MARK SCOFIELD, LITT. D., Professor of Romance La
ton University.
J. C. FREEMAN, LL. D., Professor of English Liter
[illegible] B. LL., Assistant Professor of Frenc
S. A. FORBES, Ph. D., Professor of Botany.
W. H. HOBBS, Ph. D., Professor of Mineralogy.
J. G. HUBER, Ph. D., Professor of German.
F. G. HUBER, Ph. D., Professor of the English
CHARLES H. HULL, A. M., Professor of Home Ec
W. A. S. HUNT, Editor of the "Shipping
Political Science.
[illegible], Ph. D., Professor of Physic
[illegible], Ph. D., Professor of English
of English.
[illegible], Ph. D., Associate Professor of Ma
[illegible], Ph. D., Associate Professor of
[illegible], Ph. D., Associate Professor of
[illegible], M. D., Associate Professor of

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M. V. O'SHEA, B. L., Professor of the Science and Art of Education.
E. T. OWEN, Ph. D., Professor of the French Language and Literature.
C. G. PEARSE, City Superintendent of Schools, Milwaukee. Special Lecturer in Education.
P. S. REINSCH, Ph. D., Professor of Political Science.
W. A. SCOTT, Ph. D., Director of the Course in Commerce. Professor of Political Economy.
F. C. SHARP, Ph. D., Associate Professor of Philosophy.
E. B. SKINNER, Ph. D., Assistant Professor of Mathematics.
M. S. SLAUGHTER, Ph. D., Professor of Latin.
B. W. SNOW, Ph. D., Professor of Physics.
A. W. TRESSLER, A. B., Inspector of Schools.
F. J. TURNER, Ph. D., Professor of American History.
C. A. VAN VELZER, Ph. D., Professor of Mathematics.

Instructors and Assistants.

B. M. ALLEN, Ph. D., Instructor in Comparative Anatomy.
KATHARINE ALLEN, Ph. D., Instructor in Latin.
R. H. DENNISTON, Ph. D., Instructor in Pharmaceutical Botany.
T. H. DICKINSON, M. A., Instructor in English.
S. H. GOODNIGHT, M. A., Instructor in German.
C. H. HANDSCHIN, Ph. D., Instructor in German.
ELLEN A. HUNTINGTON, A. B., Instructor in Home Economics.
L. F. MILLER, M. A., Instructor in Physics.
H. B. NORTH, B. S., Assistant in Chemistry.
G. C. SELLERY, Ph. D., Instructor in European History.
A. H. TAYLOR, B. S., Instructor in Physics.
C. A. TIBBALS, JR., A. B., Instructor in Chemistry and Assaying.
GEORGE WAGNER, M. A., Instructor in Zoology.

GENERAL INFORMATION.

The University of Wisconsin will hold in 1905 its seventh Summer Session. This session will continue for six weeks, beginning Monday, June 26, and closing Friday, August 4. While the Summer Session of the University includes the Summer School for Teachers, which has been in operation for some years, it is not an enlargement of that school, but has a different purpose. This additional term of the University will provide elementary, advanced, and graduate instruction throughout the range of subjects ordinarily covered by the Faculty of Letters and Science.

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THE SUMMER SESSION.

OFFICERS OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.

D. C. MUNRO, A. M., Director of the Summer Session. Professor of European History.

T. S. ADAMS, Ph. D., Assistant Professor of Political Economy.

C. R. BARDEEN, M. D., Professor of Anatomy.

D. E. BURCHELL, A. B., Assistant Professor of Business Administration.

W. B. CAIRNS, Ph. D., Assistant Professor of American Literature.

W. H. CARRUTH, Ph. D., Professor of Germanic Languages and Literature in the University of Kansas.

J. C. ELSOM, M. D., Professor of Physical Training, and Director of the Gymnasium.

R. T. ELY, Ph. D., LL. D., Professor of Political Economy.

C. R. FISH, Ph. D., Assistant Professor of American History.

ALCEE FORTIER, Litt. D., Professor of Romance Languages in Tulane University.

J. C. FREEMAN, LL. D., Professor of English Literature.

LUCY M. GAY, B. L., Assistant Professor of French.

R. A. HARPER, Ph. D., Professor of Botany.

W. H. HOBBS, Ph. D., Professor of Mineralogy.

A. R. HOHLFELD, Ph. D., Professor of German.

F. G. HUBBARD, Ph. D., Professor of the English Language.

CAROLINE L. HUNT, A. B., Professor of Home Economics.

MAJOR E. R. JONES, Editor of the "Shipping World," London. Special Lecturer in Political Science.

LOUIS KAHLENBERG, Ph. D., Professor of Physical Chemistry.

CHARLES W. KENT, Ph. D., Professor of English Literature in the University of Virginia.

A. G. LAIRD, Ph. D., Assistant Professor of Ancient Languages.

VICTOR LENHER, Ph. D., Associate Professor of Chemistry.

C. E. MENDENHALL, Ph. D., Associate Professor of Physics.

W. S. MILLER, M. D., Associate Professor of Anatomy.

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M. V. O'SHEA, B. L., Professor of the Science and Art of Education.
E. T. OWEN, Ph. D., Professor of the French Language and Literature.
C. G. PEARSE, City Superintendent of Schools, Milwaukee. Special Lecturer in Education.
P. S. REINSCH, Ph. D., Professor of Political Science.
W. A. SCOTT, Ph. D., Director of the Course in Commerce. Professor of Political Economy.
F. C. SHARP, Ph. D., Associate Professor of Philosophy.
E. B. SKINNER, Ph. D., Assistant Professor of Mathematics.
M. S. SLAUGHTER, Ph. D., Professor of Latin.
B. W. SNOW, Ph. D., Professor of Physics.
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H. B. NORTH, B. S., Assistant in Chemistry.
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The Summer Session of the University will meet the wants of teachers and special undergraduates who desire to broaden and deepen their knowledge; of regular undergraduates who desire to shorten their University course; and of graduates who wish to devote a part of their vacation work to advanced courses. Students may enter the University in the Summer Session instead of waiting until the fall semester. This is necessary in the case of students who plan to complete the college course in three years. It is advisable for those who are weak in language or other preparation. In general, it is advantageous for a new student to take one or two courses in the Summer Session. He thus becomes familiar with University methods of instruction; he receives more personal attention, as the classes in summer are smaller; his experience and the advice of his instructor enable him to shape his later course of study more wisely. An important feature of the announcement of many of the departments of the Summer Session is the provision for special, advanced, or research work adapted to individual students. Thus students who wish to carry on their investigations with more adequate library or laboratory facilities than their present situation affords will find here individual guidance and the ample equipment necessary to their research.

The expenses will be the same, whether the work is done in the Summer Session of the University, in the Summer School, or partly in each.

Terms of Admission.

The requirements for admission are the same for the Summer Session as for the other sessions of the University. (See page 57.) Teachers are permitted to enter, without examination, such courses of study in the Summer Session as they are prepared to take to advantage.

Students from high schools will be admitted to the elementary courses of the Summer School without special examination. They may also be admitted to University courses for which they are qualified, but University credit will be given only to students who have satisfied the regular entrance requirements of the University.

Fees.

The fees for the Summer Session of the University and the Summer School are the same. A general fee of $15 will be charged.

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Laboratory fees will be charged in the various scientific laboratories at rates proportional to those for the regular sessions of the University. The laboratory deposit for any course in chemistry will be $10, with a refund proportional to the amount of breakage and material used. In botany and zoology a fee will be charged of $1.25 for each unit hour of work performed; that is, for each thirty-two hours of time spent in the laboratory. In the physical laboratory the fee will be $2 for each unit hour. A fee of $2.50 will be charged for the course in vertebrate anatomy, and $5 for the course in histology. In the food laboratory of the department of Home Economics there is a fee of $2.50 for the course in cooking.

Excursions.

Excursions on Saturday are arranged so that students may have an opportunity of visiting interesting and picturesque localities near Madison. These excursions offer opportunities for field work in various subjects, as well as pleasant outings. Full details of all excursions will be announced each week.

DEPARTMENTS OF STUDY.

Note.—A more detailed statement of the courses here given may be found in the special announcement of the Summer Session, which may be had upon application to the Registrar of the University.

PSYCHOLOGY.

ASSOCIATE PROFESSOR SHARP.

1. Elementary Psychology. *M., Tu., W., Th., F., at* 9. Two-fifths credit.
2. Advanced Psychology. *M., Tu., W., Th., F., at* 8. Two-fifths credit.
3. Problems in the Metaphysics of Mind. *M.,* 4 *to* 6. One-fifth credit.

EDUCATION.

PROFESSOR O'SHEA, ASSISTANT PROFESSOR TRESSLER, AND SUPERINTENDENT PEARSE OF MILWAUKEE.

1. Principles of Education. *M., Tu., W., Th., F., at* 11. Two-fifths credit. Professor O'SHEA.
2. History of Education. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Assistant Professor TRESSLER.

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3. Mental Development. *M., Tu., W., Th., F., at* 10. Two-fifths credit. Professor O'SHEA.
4. School Supervision. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Assistant Professor TRESSLER.
5. Special Lectures on Practical Topics. *Hours to be arranged.* Superintendent PEARSE of Milwaukee.

HISTORY.

PROFESSOR TURNER, PROFESSOR MUNRO, ASSISTANT PROFESSOR FISH, AND DR. SELLERY.

1. Greek History. *M., W., F., at* 8. One-fifth credit. Dr. SELLERY.
2. Medieval History, 800 to 1300. *M., Tu., Th., F., at* 10. Two-fifths credit. Professor MUNRO.
3. Modern European History. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Dr. SELLERY.
4. The History of England. *M., W., F., at* 9. One-fifth credit. Assistant Professor FISH.
5. American History, 1830 to 1870. *M., Tu., W., Th., F., at* 11. Two-fifths credit. Assistant Professor FISH.
6. History of the United States from 1816 to 1830. *M., Tu., W., Th., F., at* 10. Two-fifths credit. Professor TURNER.
7. Diplomatic History of the United States, from the beginning of the Civil War. *M., W., F., at* 8. One-fifth credit. Assistant Professor FISH.
8. Medieval Civilization. *Tu., Th., at* 9. One-fifth credit. Professor MUNRO.
9. The Renaissance. *Tu., Th., at* 8, *with a third hour to be arranged.* One-fifth credit. Dr. SELLERY.
10. Seminary in American History. *M., W.,* 11 *to* 12:30. One-fifth credit. Professor TURNER.
11. Seminary in Medieval History. *F.,* 11 *to* 1. One-fifth credit. Professor MUNRO.
12. The Teaching of History. *Th., at* 11. Professors TURNER and MUNRO.
13. Historical Conference. *Tu., at* 11.

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POLITICAL ECONOMY.

PROFESSOR ELY, PROFESSOR SCOTT, AND ASSISTANT PROFESSOR ADAMS.

1. Elements of Economics. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Assistant Professor ADAMS.
2. Labor Problems. *Tu., W., Th., F., at* 9. Two-fifths credit. Assistant Professor ADAMS.
3. Financial History of the United States. *Lectures, M., W., F., at* 8; *one quiz and one conference each week.* One or two-fifths credit. Professor SCOTT.
4. The Money Market. *Lectures, Tu., Th., at* 8; *one meeting per week for quiz and conference.* One-fifth credit. Professor SCOTT.
5. Monopolies and Trusts. *Tu., W., Th., F., at* 10. Two-fifths credit. Professor ELY.
6. Industrial Evolution and Its Problems. *Tu., W., Th., F., at* 11. Two-fifths credit. Professor ELY.

POLITICAL SCIENCE.

PROFESSOR REINSCH AND THE HON. EVAN R. JONES, FORMERLY MEMBER OF PARLIAMENT.

1. American Government and Politics. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Professor REINSCH.
2. Oriental Politics. *M., W., F., at* 9. One-fifth credit. Professor REINSCH.
3. Seminary for Graduate Students. *Hour to be fixed on consultation.* Professor REINSCH.
4. Contemporary Political and Economic Life in Great Britain. *M., W., F., at* 10. One-fifth credit. Mr. EVAN R. JONES.

Mr. JONES will give two special public lectures, of which definite announcement will be made later.

Advanced students may consult Professor REINSCH with regard to special reading.

GREEK.

ASSISTANT PROFESSOR LAIRD.

1. Elementary Greek. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Assistant Professor LAIRD.

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2. Homer's *Odyssey*. *M.*, *Tu.*, *W.*, *Th.*, *F.*, *at* 9. Two-fifths credit. Assistant Professor LAIRD.
3. Euripides' *Iphigenia in Tauris;* Sophocles' *Oedipus Rex;* or other plays. *M.*, *Tu.*, *W.*, *Th.*, *F.*, *at* 10. Two-fifths credit. Assistant Professor LAIRD.
4 Lectures on Greek Forms and Syntax. *M.*, *W.*, *F.*, *at* 11. One-fifth credit. Asssitant Professor LAIRD.

LATIN.

PROFESSOR SLAUGHTER AND DR. ALLEN.

1. Teachers' Course. *M.*, *W.*, *F.*, *at* 10. One-fifth credit. Professor SLAUGHTER.
2. Writing Latin. *M.*, *W.*, *F.*, *at* 11. One-fifth credit. Professor SLAUGHTER.
3. Easy Prose. *Tu.*, *Th.*, *at* 8. One-fifth credit. Dr. ALLEN.
4. Catullus and Ovid. *M.*, *Tu.*, *W.*, *Th.*, *F.*, *at* 9. Two-fifths credit. Dr. ALLEN.
5. Vergil and Cicero. *Tu.*, *Th.*, *at* 10. One-fifth credit. Professor SLAUGHTER.
6. Latin Literature. *M.*, *W.*, *F.*, *at* 8. One-fifth credit. Professor SLAUGHTER.
7. Latin Inscriptions. *Tu.*, *Th.*, *at* 11. One-fifth credit. Professor SLAUGHTER.

ENGLISH.

PROFESSOR FREEMAN, PROFESSOR KENT, PROFESSOR HUBBARD, ASSISTANT PROFESSOR CAIRNS, AND MR. DICKINSON.

1. Freshman English. *M.*, *Tu.*, *W.*, *Th.*, *F.*, 8 *to* 10. Three-fifths credit. Mr. DICKINSON.
2. A Study of English Classics, with direct reference to teaching. *M.*, *W.*, *F.*, *at* 12. Mr. DICKINSON.
3. Modern English Grammar. *M.*, *Tu.*, *W.*, *Th.*, *F.*, *at* 8. Two-fifths credit. Professor HUBBARD.
4. General Survey of English Literature. *M.*, *Tu.*, *W.*, *Th.*, *F.*, 8 *to* 10. Three-fifths credit. Assistant Professor CAIRNS.
5. Chaucer. *M.*, *Tu.*, *W.*, *Th.*, *F.*, *at* 11. Two-fifths credit. Professor FREEMAN.
6. Shakespeare. *M.*, *Tu.*, *W.*, *Th.*, *F.*, *at* 10. Two-fifths credit. Professor FREEMAN.

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7. Lectures on Shakespeare. *W., at* 5. Professor FREEMAN.
8. American Literature. *M., W., F., at* 12. One-fifth credit. Assistant Professor CAIRNS.
9. Browning. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Professor HUBBARD.
10. Poetics. *M., W., F., at* 10. One-fifth credit. Professor KENT.
11. Lectures on Southern Literature, with special reference to the poets. *M., Tu., Th., F., at* 5. Two-fifths credit, if assigned outside reading is done. Professor KENT.
12. Tennyson. *Hours to be arranged.* One-fifth credit. Professor KENT.

GERMAN.

PROFESSOR HOHLFELD, DR. HANDSCHIN, MR. GOODNIGHT, AND PROFESSOR CARRUTH, HEAD OF THE GERMAN DEPARTMENT OF THE UNIVERSITY OF KANSAS.

1. Elementary German. *M., Tu., W., Th., F., at* 9 *and* 11. Four-fifths credit. Mr. GOODNIGHT.
2. Conversation. *M., Tu., W., Th., F., at* 11. One-fifth credit. Dr. HANDSCHIN.
3. Composition and Grammar Review. *M., Tu., W., Th., at* 10. Two-fifths credit. Professor CARRUTH.
4. The Classical Drama. *M., Tu., W., Th., at* 12. Two-fifths credit. Professor HOHLFELD.
5. Advanced Prose Readings. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Dr. HANDSCHIN.
6. Advanced Practice in Writing and Speaking German. *M., W., F., at* 10. One-fifth credit. Mr. GOODNIGHT.
7. Teachers' Course. *M., W., F., at* 8. One-fifth credit. Professor HOHLFELD.
8. Introduction to the Historical Study of German. *Three hours a week.* One-fifth credit. Dr. HANDSCHIN.
9. History of the German Novel. *M., W., F., at* 9. One or two-fifths credit. Professor CARRUTH.
10. Sixteenth Century Literature. *Three hours a week.* One-fifth credit. Professor CARRUTH.
11. Seminary in German Literature. *Tu., Th.,* 8 *to* 9:30. One or two-fifths credit. Professor HOHLFELD.
12. Research Work for Advanced Graduate Students. Under the direction of Professors CARRUTH and HOHLFELD.

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The *Germanistische Gesellschaft*, an organization of students and instructors interested in the study of German life, language, and literature, will meet one evening each week. The programs will consist of German lectures, music, singing, and social intercourse.

In addition to the lectures at the meetings of the *Gesellschaft*, there will be a number of public lectures in English on German subjects of general interest.

FRENCH.

PROFESSOR OWEN, PROFESSOR FORTIER, OF TULANE UNIVERSITY, AND ASSISTANT PROFESSOR GAY.

1. Grammar and Elementary French. *M., Tu., W., Th., F.*, 8 *to* 10. Four-fifths credit. Assistant Professor GAY.
2. Readings from Modern Authors. *M., W., F.*, 10 *to* 12. Three-fifths credit, or, with additional reading, four-fifths. Professor OWEN.
3. Lectures on Thought and Language Topics. *M., at* 12. Professor OWEN.
4. Contemporary France, Institutions and Politics. *Three times a week.* One-fifth credit. Professor FORTIER.
5. Lamartine and Victor Hugo. *Twice a week.* One-fifth credit. Professor FORTIER.
6. Alfred de Vigny and Alfred de Musset. *Three times a week.* One-fifth credit. Professor FORTIER.

SPANISH.

ASSISTANT PROFESSOR GAY.

1. Grammar and Elementary Spanish. *M., Tu., W., Th., F., at* 10. Two-fifths credit.

MATHEMATICS.

PROFESSOR VAN VELZER AND ASSISTANT PROFESSOR SKINNER.

1. Algebra. *M., Tu., W., Th., F., at* 2. Two-fifths credit. Assistant Professor SKINNER.

Credit for the algebra of the freshman year in the College of Letters and Science may be obtained by making up some additional work.

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2. Solid Geometry. *M., Tu., W., Th., F., at* 11. Assistant Professor SKINNER.

   No university credit will be given for this course but its completion satisfies the entrance requirement of geometry for the University.

3. Plane Trigonometry and Logarithms. *M., Tu., W., Th., F., at* 10. Two-fifths credit. Professor VAN VELZER.

4. Analytic Geometry. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Professor VAN VELZER.

5. Calculus. *M., Tu., W., Th., F., at* 10. Two-fifths credit. Assistant Professor SKINNER.

6. Selected Topics in Advanced Algebra. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Professor VAN VELZER.

7. Methods of Teaching Mathematics, with special reference to high school work. *M., W., F., at* 3. One-fifth credit. Assistant Professor SKINNER.

8. Mathematical Reading. Under the supervision of Professor VAN VELZER and Assistant Professor SKINNER.

   If a sufficient number of students should desire it, courses may be given in one or two advanced subjects. For the present year the subjects would be selected from the following list: Differential Equations, Advanced Calculus, Theory of Numbers, Theory of Functions.

PHYSICS.

PROFESSOR SNOW, ASSOCIATE PROFESSOR MENDENHALL, MR. TAYLOR, AND MR. MILLER.

1. General Lectures. *M., Tu., W., Th., F., at* 12. Two-fifths credit. Mr. TAYLOR.

   In the Summer Session it is designed to complete in three years the year's work of course 1 in physics, taking mechanics and heat during 1905, electricity and magnetism during 1906, and sound and light during 1907.

2. Introductory Laboratory Practice. *Twenty hours per week.* One-fifth credit for each thirty hours of work performed Mr. MILLER.

3. Theoretical Physics. Heat or light, as class elects. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Associate Professor MENDENHALL.

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4. Advanced Laboratory Practice. Heat or Light, as elected by class in course 3. *Twenty or thirty hours a week, at* 9. One-fifth credit for each thirty hours of work performed. Associate Professor MENDENHALL.
5. Thesis Work. Fifty hours per week will be necessary to complete the course. Associate Professor MENDENHALL.
6. Graduate Research. Professor SNOW and Associate Professor MENDENHALL.

COURSES WITHOUT UNIVERSITY CREDIT.

7. Lectures. Mechanics and heat, electricity and magnetism. acoustics and optics. *Daily, except S., at* 5. Professor SNOW.
8. Elementary Laboratory Practice. *M., Tu., W., Th., F., S.,* 8 *to* 1. Mr. MILLER.

CHEMISTRY.

PROFESSOR KAHLENBERG, ASSOCIATE PROFESSOR LENHER, MR. TIBBALS, AND MR. NORTH.

1. General Chemistry. *Lectures, M., Tu., W., Th., F., at* 11. Three-fifths credit for lectures and laboratory work. Associate Professor LENHER.
2. Qualitative Analysis. Associate Professor LENHER and Mr. TIBBALS.
3. Quantitative Analysis. Associate Professor LENHER.
4. Chemical Preparations. Associate Professor LENHER.
5. Research Work in Inorganic Chemistry. Associate Professor LENHER.
6. Electrochemistry. *Lectures, M., Tu., W., Th., F., at* 8; *laboratory work, two or more hours per day.* Four-fifths credit. Professor KAHLENBERG.
7. Physical Chemistry. Professor KAHLENBERG.
8. Advanced Physical Chemistry. Professor KAHLENBERG.
9. Advanced Electrochemistry. Professor KAHLENBERG.
10. Research in Physical Chemistry and Electrochemistry. Professor KAHLENBERG.
11. Organic Compounds. Professor KAHLENBERG.

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GEOLOGY AND PHYSICAL GEOGRAPHY.

PROFESSOR HOBBS.

1. Physiography. Lectures. *M., Tu., W., Th., F.*, with excursions two or three times a week. Two-fifths credit.
2. Petrology. *M., Tu., W., Th., F.* Two-fifths credit.

Class Excursions. One-fifth credit may be granted for a satisfactory written report on the work of all class excursions, not exceeding three a week.

ZOOLOGY.

MR. WAGNER.

1. Field Zoology. *Lectures, M., W., F., at* 8. *Ten laboratory hours per week.* Three-fifths credit.
2. Systematic Zoölogy. *Hours by arrangement.*
3. Organic Evolution. *M., W., at* 4.

An excursion of students taking zoölogy will be made to the State Fish Hatchery near Madison. Other excursions, separately or in conjunction with other departments of natural science, will also be arranged.

ANATOMY.

PROFESSOR BARDEEN, ASSOCIATE PROFESSOR MILLER, AND DR. B. M. ALLEN.

1. Physiological Anatomy. *Lectures and laboratory work daily,* 11 *to* 1. Three-fifths credit. Professor BARDEEN and Associate Professor MILLER.
2. Mammalian Anatomy. *Daily,* 2 *to* 4. *Three-fifths credit.* Dr. ALLEN.
3. Histology and Organology. *Daily,* 9 *to* 11. Three-fifths credit. Associate Professor MILLER.
4. Modern Laboratory Methods. For advanced and graduate students and physicians. *Hours arranged upon consultation.*
5. Embryology and Experimental Morphology. *Daily,* 9 *to* 11. Professor BARDEEN and Dr. ALLEN.

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BOTANY.

PROFESSOR HARPER, DR. DENNISTON, AND ASSISTANT.

1. General Botany. *Lectures, M., W., Th., at* 10; *Laboratory work, Tu., F.,* 9 *to* 11; *M., W., Th.,* 9 *to* 10. Professor HARPER and Dr. DENNISTON.
2. Algæ. *Three times a week, W., Th., F.* May be taken in connection with course 2, the two together giving three-fifths credit. Professor HARPER and assistant.
3. Fungi. *Three times a week, M., Tu., W.* Professor HARPER and assistant.
4. Mosses and Ferns. *Hours on consultation.* Professor HARPER.
5. Vegetable Histology. *Daily laboratory work and two lectures a week; hours on consultation.* Dr. DENNISTON.
6. Native Trees and Shrubs. Lectures and field work. *Twice a week; hours on consultation.* Dr. DENNISTON.
7. Physiology of the Cell. *Daily, M., Tu., W., Th., F.* Professor HARPER and Dr. DENNISTON.
8. Special Physiology of the Flowering Plants. A laboratory course. Professor HARPER.

Excursions in connection with courses 1 to 6.

HOME ECONOMICS.

PROFESSOR HUNT AND MISS HUNTINGTON.

The courses in Home Economics offered for the summer of 1905 have been adapted to the needs of teachers, both those who wish to specialize in the subject, and also those grade and high school teachers who wish to incorporate instruction in Home Economics into general courses. Attention is called not only to the courses offered in this department, but also to the courses in chemistry, bacteriology and other sciences which are offered during the summer, and which should be taken as preparatory work by those who wish to make a speciality of Home Economics.

During the summer of 1906 the department will offer in addition to the teachers' course, a course for institutional workers, (housekeepers, matrons, dieticians). For this course much of the work given during the summer of 1905 offers suitable preparation. Attention is called to the courses in chemistry, bacteriology and to courses 1 and 2 in Home Economics.

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1. Cooking. Lectures, *Tu., Th., at* 10; Laboratory practice, *M., W., F., at* 10. Miss HUNTINGTON.
2. House Sanitation. Lectures, *M., W., F., at* 9. Professor HUNT.
3. House Decoration. Lectures, *Tu., Th., at* 9. Professor HUNT.
4. The Teaching of Domestic Science. *Tu., Th., at* 10. Professor HUNT.

PHYSICAL TRAINING.

DR. ELSOM AND STUDENT ASSISTANTS.

The University Gymnasium is open to all students of the Summer Session, without additional fees, except a charge of fifty cents for a locker.

Light Gymnastics. Instruction and practice in the various gymnastic drills, in free movements, and with dumb-bells, wands, and clubs; methods of conducting classes, setting-up exercises, and all forms of the lighter gymnastics, including gymnastic games.

Heavy Gymnastics. Advanced work is given on the horizontal, vaulting, and parallel bars; horses, bucks, flying and traveling rings, trapeze; tumbling, simple and advanced jumping, etc.

Swimming. Daily classes. Methods of rescuing drowning persons. Practical instruction in what to do in emergencies.

Normal Course.

(a) Lectures on the Theory and Physiology of Exercise.

(b) Lectures on First Aid to the Injured.

(c) Instructions in all forms of light and heavy gymnastics and in methods of conducting gymnasium classes; a special course in gymnastic games.

The attention of applicants for this course is called to the courses in Anatomy, Psychology, and Zoölogy, which are mentioned elsewhere.

The Normal classes are open to men and women. Further information may be had by addressing the Director of the Gymnasium.

Class Gymnastics: Daily, at 4.

Normal Class in Gymnastics: *Tu., Th., S., at* 5.

Classes in Swimming, for Women: *M., W., F., at* 5. *Tu., Th., S., at* 11.

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THE WISCONSIN SUMMER SCHOOL.

The work of the Summer School is consolidated with that of the Summer Session. The courses of study formerly given in the Summer School are included in the Summer Session and will be found announced under the appropriate departments of study on preceding pages. The terms of admission to the school remain as heretofore, and the fee is the same as that for the Summer Session. The Summer School courses will be found adapted, as heretofore, to recent high school graduates who intend to enter the University; to University and college students who expect to teach and desire to review the studies which they will be called upon to teach; to teachers who wish to study the principles of teaching and still further prepare themselves in the branches in which they are giving instruction; to principals and superintendents who desire aid to the better understanding of the theory and practice of their work. Persons who intend to take the state examinations for teachers will also find means of completing their preparation.

SUMMER SCHOOL FOR ARTISANS AND APPRENTICES.

This school of shop work and laboratory practice has been established for the benefit of machinists, carpenters, or sheet-metal workers; stationary, marine, or locomotive engineers; shop foremen and superintendents; superintendents of waterworks, electric light plants, power stations, factories, large office and store buildings in cities, and for young men who wish to qualify themselves for such positions. The session is six weeks in length, being coincident with the Summer Session of the College of Letters and Science. The tuition fee is $15, to which are added small laboratory and shop fees.

SUMMER SCHOOL FOR LIBRARY TRAINING.

The Wisconsin Free Library Commission announces the eleventh annual session of the Summer School for Library Training to be held in the Historical Library Building from May 1 through June 23, 1905.

For this course there will be no charge for tuition to students who are employed in Wisconsin public libraries. For others the fee is $20. Students are required to register on Saturday, April 29.

For further information address Miss Cornelia Marvin, Room 118, Historical Library, Madison, Wis.

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THE GRADUATE SCHOOL.

FACULTY.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
JOHN B. PARKINSON, A. M., Vice-President. Professor of Constitutional and International Law.

T. S. ADAMS, Ph. D., Assistant Professor of Political Economy.
A. S. ALEXANDER, M. D. C., Professor of Veterinary Science.
C. E. ALLEN, Ph. D., Assistant Professor of Botany.
S. M. BABCOCK, Ph. D., LL. D., Assistant Director and Chief Chemist of the Agricultural Experiment Station. Professor of Agricultural Chemistry.
C. R. BARDEEN, M. D., Professor of Anatomy.
E. A. BIRGE, Ph. D., Sc. D., LL. D., Dean of the College of Letters and Science.
A. C. L. BROWN, Ph. D., Assistant Professor of English.
STORM BULL, M. E., Professor of Steam Engineering.
D. E. BURCHELL, A. B., Assistant Professor of Business Administration.
C. F. BURGESS, E. E., Associate Professor of Electrical Engineering.
C. H. BURNSIDE, M. A., Assistant Professor of Mechanics.
W. B. CAIRNS, Ph. D., Assistant Professor of American Literature.
VICTOR COFFIN, Ph. D., Assistant Professor of European History.
J. R. COMMONS, A. M., Professor of Political Economy.
G. C. COMSTOCK, Ph. B., LL. B., Director of Washburn Observatory, and Professor of Astronomy.
W. W. DANIELLS, M. S., Sc. D., Professor of Chemistry.
R. E. N. DODGE, M. A., Assistant Professor of English.
L. W. DOWLING, Ph. D., Assistant Professor of Mathematics.
R. T. ELY, Ph. D., LL. D., Professor of Political Economy.
E. H. FARRINGTON, M. S., Professor of Dairy Husbandry.
N. M. FENNEMAN, Ph. D., Professor of General and Physiographic Geology.

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RICHARD FISCHER, Ph. C., Ph. D., Assistant Professor of the Theory and Practice of Pharmacy.

C. R. FISH, Ph. D., Assistant Professor of American History.

G. C. FISKE, Ph. D., Assistant Professor of Latin.

D. B. FRANKENBURGER, A. M., LL. B., Professor of Rhetoric and Oratory.

J. C. FREEMAN, LL. D., Professor of English Literature.

W. D. FROST, Ph. D., Assistant Professor of Bacteriology.

LUCY M. GAY, B. L., Assistant Professor of French.

W. F. GIESE, A. M., Associate Professor of Romance Languages.

R. A. HARPER, Ph. D., Professor of Botany.

W. A. HENRY, D. Agr., D. Sc., Dean of the College of Agriculture and Director of the Agricultural Experiment Station. Professor of Agriculture.

H. W. HILLYER, Ph. D., Assistant Professor of Organic Chemistry.

W. H. HOBBS, Ph. D., Professor of Mineralogy and Petrology.

A. R. HOHLFELD, Ph. D., Professor of German.

F. G. HUBBARD, Ph. D., Professor of the English Language.

G. C. HUMPHREY, B. S., Assistant Professor of Animal Husbandry.

CAROLINE L. HUNT, A. B., Professor of Home Economics.

D. C. JACKSON, C. E., Professor of Electrical Engineering.

JOSEPH JASTROW, Ph. D., Professor of Psychology.

LOUIS KAHLENBERG, Ph. D., Professor of Physical Chemistry.

ALEXANDER KERR, A. M., Professor of the Greek Language and Literature.

G. N. KNAPP, B. S., Assistant Professor of Farm Engineering.

EDWARD KREMERS, Ph. G., Ph. D., Professor of Pharmaceutical Chemistry and Director of the Course in Pharmacy.

A. G. LAIRD, Ph. D., Assistant Professor of Ancient Languages.

H. B. LATHROP, A. B., Associate Professor of English Literature.

C. K. LEITH, Ph. D., Professor of Economic and Structural Geology.

VICTOR LENHER, Ph. D., Associate Professor of Chemistry.

W. S. MARSHALL, Ph. D., Assistant Professor of Zoology.

E. R. MAURER, B. C. E., Professor of Mechanics.

D. W. MEAD, C. E., Professor of Hydraulic and Sanitary Engineering.

C. E. MENDENHALL, Ph. D., Associate Professor of Physics.

B. H. MEYER, Ph. D., Professor of Political Economy.

W. S. MILLER, M. D., Associate Professor of Anatomy.

D. C. MUNRO, A. M., Professor of European History.

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J. E. Olson, B. L., Professor of the Scandinavian Languages and Literature.

M. V. O'Shea, B. L., Professor of the Science and Art of Education.

E. T. Owen, Ph. D., Professor of the French Language and Literature.

J. F. A. Pyre, Ph. D., Assistant Professor of English Literature.

P. S. Reinsch, Ph. D., Professor of Political Science.

A. W. Richter, M. E., Professor of Experimental Engineering.

E. C. L. C. Roedder, Ph. D., Assistant Professor of German Philology.

H. L. Russell, Ph. D., Professor of Bacteriology.

E. P. Sandsten, Ph. D., Professor of Horticulture.

W. A. Scott, Ph. D., Director of the Course in Commerce, and Professor of Political Economy.

G. C. Shaad, B. S., Assistant Professor of Electrical Engineering.

F. C. Sharp, Ph. D., Associate Professor of Philosophy.

Grant Showerman, Ph. D., Assistant Professor of Latin.

J. W. Shuster, B. S., Assistant Professor of Electrical Engineering.

E. B. Skinner, Ph. D., Assistant Professor of Mathematics.

M. S. Slaughter, Ph. D., Professor of Latin.

C. S. Slichter, M. S., Professor of Applied Mathematics.

C. F. Smith, Ph. D., Professor of Greek and Classical Philology.

L. S. Smith, C. E., Assistant Professor of Topographic and Geodetic Engineering.

W. M. Smith, A. B., University Librarian.

B. W. Snow, Ph. D., Professor of Physics.

S. E. Sparling, Ph. D., Assistant Professor of Political Science.

Susan A. Sterling, M. L., Assistant Professor of German.

B. V. Swenson, E. E., Assistant Professor of Electrical Engineering.

W. D. Taylor, C. E., Professor of Railway Engineering.

H. J. B. Thorkelson, M. E., Assistant Professor of Steam Engineering.

A. W. Tressler, A. B., Inspector of Schools.

Augustus Trowbridge, Ph. D., Professor of Mathematical Physics.

F. E. Turneaure, C. E., Dean of the College of Engineering, and Professor of Engineering.

F. J. Turner, Ph. D., Professor of American History.

C. A. Van Velzer, Ph. D., Professor of Mathematics.

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E. K. J. H. Voss, Ph. D., Professor of German Philology.
A. R. Whitson, B. S., Professor of Agricultural Physics.
W. H. Williams, A. B., Professor of Hebrew and Hellenistic Greek.
F. W. Woll, Ph. D., Associate Professor of Agricultural Chemistry, and Chemist of the Experiment Station.
O. B. Zimmerman, M. E., Assistant Professor of Machine Design.

Instructors and Assistants.

B. M. Allen, Ph. D., Instructor in Comparative Anatomy.
Katharine Allen, Ph. D., Instructor in Latin.
J. D. Barnett, A. B., Assistant in Political Science.
Arthur Beatty, Ph. D., Instructor in English.
W. G. Bleyer, Ph. D., Instructor in English.
B. H. Bode, Ph. D., Instructor in Philosophy.
F. P. Boswell, Ph. D., Assistant in Experimental Psychology.
J. C. Brown, M. S., Instructor in Agricultural Chemistry.
R. H. Denniston, Ph. D., Instructor in Pharmaceutical Botany.
Jerome Dowd, M. A., Resident Lecturer in Sociology.
M. B. Evans, Ph. D., Instructor in German.
C. H. Handschin, Ph. D., Instructor in German.
E. G. Hastings, M. S., Instructor in Bacteriology.
F. T. Kelly, Ph. D., Instructor in Hebrew and Hellenistic Greek.
F. W. Meisnest, Ph. D., Instructor in German.
G. M. Norman, B. S., Instructor in Electrical Engineering.
E. W. Olive, Ph. D., Resident Lecturer in Botany.
J. B. Overton, Ph. D., Instructor in Botany.
U. B. Phillips, Ph. D., Instructor in History.
Ferdinand Schmitter, A. B., M. D., Instructor in Anatomy.
G. C. Sellery, Ph. D., Instructor in European History.
C. N. Smiley, Jr., M. A., Instructor in Latin.
H. C. Taylor, Ph. D., Instructor in Political Economy.
George Wagner, M. A., Instructor in Zoology.
R. M. Wernaer, Ph. D., LL. B., Instructor in German.

THE ADMINISTRATIVE COMMITTEE.

Charles R. Van Hise, Ph. D., LL. D., President of the University.
George C. Comstock, Ph. B., LL. B., Chairman. Director of the Washburn Observatory, and Professor of Astronomy.
Edward A. Birge, Ph. D., Sc. D., LL. D., Dean of the College of Letters and Science.

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CHARLES F. BURGESS, E. E., Secretary. Associate Professor of Electrical Engineering.
RICHARD T. ELY, Ph. D., LL. D., Professor of Political Economy.
WILLIAM A. HENRY, D. Agr., D. Sc., Dean of the College of Agriculture.
ALEXANDER R. HOHLFELD, Ph. D., Professor of German.
LOUIS KAHLENBERG, Ph. D., Professor of Physical Chemistry.
MOSES S. SLAUGHTER, Ph. D., Professor of Latin.
FREDERIC E. TURNEAURE, C. E., Dean of the College of Engineering.
FREDERICK J. TURNER, Ph. D., Professor of American History.

GENERAL STATEMENT.

The University of Wisconsin is a part of the system of public instruction provided by the state, but is open to all properly qualified students without regard to state lines. The students of the Graduate School are largely from other educational institutions located in many states, although, as is the case at other universities, many of the students of the Graduate School are from the undergraduate departments of the University of Wisconsin. It is the aim of the University to offer the opportunities for advanced instruction and research to as wide a constituency as possible. No limitations are placed upon a student's freedom in research and in the expression of his conclusions upon subjects which he is prepared to treat. The University avoids all that is partisan in politics and sectarian in religion, without debarring its members from investigation and activity in any field.

ORGANIZATION.

Prior to 1895 the graduate work of the University was conducted by its several departments of instruction without further co-operation than is implied in their relations to the University as a whole. The development of this work, however, led to its organization, in 1895, as a Department of Graduate Study, and in 1904 it was advanced to the status of a Graduate School, the administration of which was entrusted to a committee of the University Faculty called the Administrative Committee of the Graduate School. The Chairman of this committee is charged with general supervision of all graduate students, and is the medium of communication between such students and the Faculty. The faculty of the Graduate School includes all heads of Uni-

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versity departments in which graduate work is offered, and all members of the instructional staff of the University in charge of graduate courses.

AIMS AND METHODS.

The Graduate School aims to serve the needs of young men and women of college training who desire a larger and more thorough acquaintance with the scholarship and research of the world, than can be obtained in the current undergraduate courses. It seeks to awaken in the minds of capable men and women an appreciation of high scholarship, research, and the advancement of learning to the end that they may effectively aid, not only in the promulgation of knowledge, but also in extending the boundaries of knowledge. Although the work of the Graduate School is in large part planned with reference to the needs of those who desire to fit themselves for the higher positions in the work of education, and who as preparation for this work seek to specialize along definite lines, the opportunities of the School are open to others as well.

The University aims to give advanced instruction of a high character in each department of its Graduate School, but the scope, form, and methods of this instruction are determined independently within each department. Lectures and the seminary method are largely employed, and especial emphasis is everywhere laid upon bringing the graduate student into contact with the research problems of his department of study. To this end able students share in the investigative work of their instructors and are encouraged to acquire the spirit as well as the methods of productive work. Provision has been made by the University for the publication under its auspices of the results of especially meritorious work of this kind, and doctor's theses of more than common merit are occasionally thus published. For information on the publications of the University, see the Appendix to this catalogue.

CLUBS AND SOCIETIES.

To promote interest in problems of scholarship and investigation, and for training in the presentation of results, numerous voluntary clubs and societies have been established by instructors and students in the Graduate School. Among these are:

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THE SCIENCE CLUB,
THE CLASSICAL CLUB,
THE LANGUAGE AND LITERATURE CLUB,
THE ENGLISH CLUB,
THE PHILOSOPHICAL CLUB,
THE GERMAN JOURNAL CLUB,
THE CHEMICAL CLUB,
THE BIOLOGICAL CLUB,
THE MATHEMATICAL CLUB,
THE UNIVERSITY OF WISCONSIN BRANCH OF THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.
THE UNIVERSITY OF WISCONSIN SECTION OF THE AMERICAN ELECTROCHEMICAL SOCIETY.

FELLOWSHIPS AND SCHOLARSHIPS.

University Fellowships.

For the purpose of promoting higher scholarship and research, the Regents have established thirteen University fellowships of $400 each, of which two are especially devoted to Latin and Greek, two to Political Economy, two to History, and one to German.

The following are the regulations respecting these fellowships:

1. Any fellowship to which the present regulations apply may be held by any graduate of a college of recognized standing or by anyone whose education is equivalent to that represented by a college degree. Those about to take such a degree are eligible as candidates, the regulations applying to the time of entrance upon the duties of the fellowship. Men and women are equally eligible.
2. Fellowships will be granted upon application only, which should be made upon a special blank form furnished by the Registrar of the University; such application, with accompanying evidence of merit, attainment, and ability, to be in the hands of the President before May 1st of the collegiate year preceding that during which the fellowship is held. In 1906 and thereafter such application must be made prior to April 1st.
3. All fellowships will be filled each year. Fellows may be re-elected for one additional year only.
4. Application must be accompanied by evidence of scholarship, ability and general worthiness; such as theses (whether prepared for this or other purposes), published writings, testimonials from instructors, outline of educational course pursued, special distinctions gained, and the like. Applications for reappointment should contain a full account of the work of the preceding year. Applications, to receive attention, must contain a definite statement of the special studies which the applicant intends to pursue.
5. The fellowships will be assigned to the several departments according to the studies which the fellows intend to pursue.
6. Each fellow shall pursue his studies under the direction of the professor or professors in charge of his special studies. Assignment of University services to the fellows shall be made by the President

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in consultation with the head of the department to which the fellow has been assigned, and the work assigned may be equivalent to one hour of teaching daily, or the supervision of laboratory work for two hours daily.

7. At a meeting of the Faculty in the month of May*, which meeting shall be duly announced as the meeting for the election of fellows, the President shall call upon the several heads of the departments in which applications have been received, to make a statement of the merits of the candidates in their departments. After all such statements have been made, the members of the Faculty will cast their ballots for as many candidates as there are fellows to be elected, and those receiving the highest number of votes (provided that each receive a majority of the votes cast) shall be recommended to the Regents for appointment to fellowships.

Vacancies in fellowships, due to resignation or other cause, may be filled as they occur, at the option of the Faculty.

Honorary Fellowships.

The Regents have established honorary fellowships, equal in number to the regular fellowships, and filled in a similar way. These are restricted, however, to such persons as have already held academic honors, such as fellowships. No compensation is attached to these positions except the remission of University fees, and no teaching service is required; but to be eligible to an honorary fellowship one must be a graduate of at least one year's standing.

The Biblical Alliance Fellowship.

The Biblical Alliance of Wisconsin has established a fellowship in Hebrew or Hellenistic Greek of $400 annually. The Biblical Alliance also contributes $1,500 annually for the encouragement of studies in the department of Hebrew and Hellenistic Greek, a part of which amount goes to graduate students.

The Hebrew Fellowship.

The Hebrew Lectureship and Scholarship Society offers a fellowship, of the value of $400, for special excellence in Hebrew studies.

The Gustav Kletzsch Fellowship.

Through the generosity of Gustav A. Kletzsch, M. D., of Milwaukee, there was established in 1901 and continued in subsequent years, a fellowship in Bacteriology yielding $400 annually.

*April in 1906 and thereafter. See § 2.

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Graduate Scholarships.

The Regents of the University maintain ten graduate scholarships, of the value of $225 each. Two of these are designated for Economics and Political Science, one for European history, one for American history and two for Engineering. University scholars are required to pay the regular incidental fee, but not the non-resident tuition fee.

A friend of the University has founded a scholarship known as the Henrik Wergeland Graduate Scholarship, of the value of $200 annually, open to graduate students of Norwegian ancestry.

In 1900, public-spirited citizens of Sheboygan established a Graduate Scholarship in Germanic Philology of the annual value of $300.

Mr. F. W. Allis, of Madison, has generously established a Graduate Scholarship in German Philology, of the annual value of $200.

A scholarship for Japanese students, amounting to $50 annually for four years, has been founded by Mr. Benj. K. Miller, of Milwaukee.

ADMISSION TO THE GRADUATE SCHOOL.

Graduates from four-year courses of study in any approved university or college will be admitted to the Graduate School without examination, but will not be considered as candidates for a higher degree until formal announcement of such candidacy has been made to and approved by the Administrative Committee. Each applicant for admission to the Graduate School should present, in person, to the University Registrar, his college diploma. He will receive upon registration a statement of fees to be paid at the Regents' office. This statement serves also as a certificate of enrollment in the Graduate School, and should be presented promptly to the Chairman of the Administrative Committee, at Room 6, University Hall, who will issue to the student an election card for presentation to the several instructors under whom he desires to study. Students already enrolled in the Graduate School should obtain from the Chairman of the Administrative Committee an election card at or before the beginning of each semester. (For a statement of fees to be paid in the Graduate School see page 81.)

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ASSIGNMENT OF STUDIES.

The election card should be presented first to the instructor under whom the student's principal work is to be done, who will advise with regard both to the courses of major study and to the subordinate studies that may be combined advantageously with the major. The studies thus determined will be entered upon the election card, which must be signed by the adviser and endorsed with the approval of each instructor with whom work is to be taken. The completed card must be submitted in person to the Chairman of the Administrative Committee within ten days after the opening of the semester. The student's registration is not complete until the election card has been thus submitted to and approved by the several officers above named.

Graduate students are invited to confer freely with the Chairman of the Administrative Committee in all matters concerning their relations to the University.

CANDIDACY FOR DEGREES.

Candidates for all higher degrees are required to present to the Administrative Committee formal application for admission to candidacy for the proposed degree. Such application must be made at least eight months prior to the date at which the examinations for the degree are to be taken, and may be made, with advantage to the student, at an earlier date.

SECOND DEGREES.

Upon the conditions stated below the degree of *Master of Arts* will be conferred upon Bachelor of Arts of the University of Wisconsin, and upon graduates of this and other institutions of similar rank who have pursued courses of study equivalent to those now leading to the degree of B. A. in the University of Wisconsin.

Upon similar conditions the degree of *Master of Philosophy* will be conferred upon graduates of the University of Wisconsin who have taken the degree of *Bachelor of Philosophy.*

1. During a period of at least one academic year the candidate must pursue in residence at the University an approved course of study, consisting of a major subject chosen from among the graduate courses offered by the University, and a minor subject which may be either graduate or undergraduate work, but

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must not be study for a profession. Approximately twice as much time should be given to the major subject as to the minor.

2. Ordinarily the required major and minor courses must severally be taken within a single department of the University, but in special cases the Administrative Committee will authorize a major or minor to be constructed from closely related work in different departments.

3. On or before June 1 of the year in which the degree is to be conferred the candidate must file with the Chairman of the Administrative Committee a thesis approved by the instructor under whom his major study has been taken. After the thesis has been submitted, the candidate must sustain an oral examination upon the graduate work offered in support of his candidacy. Subject to the approval of the President of the University, the time and place of this examination will be determined and the examining committee appointed by the Chairman of the Administrative Committee.

4. Candidates for the master's degree who are graduates of the University of Wisconsin may be permitted, by vote of the Administrative Committee, to do one-half of this work *in absentia*.

5. Upon recommendation of the instructor having charge of the candidate's major subject of study, the Committee may excuse from the preparation of a master's thesis any graduate of the University whose bachelor's thesis gives sufficient evidence of ability to conduct investigation such as is expected of candidates for the master's degree. Candidates desiring to avail themselves of this privilege must continue their graduate studies in the department in which their undergraduate major lay, and must make application for excuse from the master's thesis not later than November 1 of the academic year in which the degree is sought.

6. Graduate students whose training has not been equivalent to that represented by the baccalaureate degrees of the University of Wisconsin, will be required to devote to their candidacy for the master's degree a longer period than the minimum of one year above described. Such students may be required by the Committee to pursue in addition to the required major and minor subjects, studies assigned with a few to remedying deficiencies in their preliminary training.

7. Students who during their candidacy for the master's degree are engaged in teaching, or other remunerative employment,

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will be required to devote to their studies such period longer than one year as may be designated by the Committee.

Students in Law.

Graduates of approved institutions who pursue the course in law at the University, and who, by reason of their superior training, are able to take additional studies advantageously, may receive a second degree at graduation from the College of Law, on condition of having satisfactorily pursued studies in the Graduate School equivalent to five hours a week during two years and on complying with the other required conditions.

Students in Engineering.

The degrees of *Civil Engineer*, *Mechanical Engineer*, and *Electrical Engineer* are conferred as second degrees upon Bachelors of Science who have completed the civil, mechanical, and electrical engineering courses respectively, and (1), who pursue advanced professional study at the University for one year and present a satisfactory project or thesis; or (2), who furnish suitable evidence of three years of professional work, (of which one must have been spent in a position of responsibility), and present a satisfactory thesis.

The University offers its second degrees in engineering to graduates of other institutions of high standing who shall reside at the University and pursue the requisite studies under the immediate direction of the faculty of the Graduate School.

THE DOCTOR'S DEGREE.

The degree of *Doctor of Philosophy* will be conferred upon successful candidates after not less than three years of graduate study, of which either the first two years or the last year must be spent at this University; but it is not conferred solely as the result of faithful study extending over any prescribed period. Special attainments are required in the case of candidates for this degree, particularly the power of independent investigation, shown by the production of a thesis embodying original research or creative scholarship, presented with a fair degree of literary skill.

The attention of graduate students is called to the following regulations respecting candidacy for the doctor's degree.

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1. Candidates for this degree are required to select as a principal line of study some definite department of knowledge, with whose entire extent they must become familiar, in general terms, and with some part of which (the one in which the thesis falls), they must acquire a detailed acquaintance. The group of studies thus contemplated is designated the student's major subject, and it is expected that work upon this subject will cover not less than three years of graduate study. This group of studies may be divided among several instructors, one of which will act as the student's adviser in the selection and arrangement of topics constituting the major, and in the selection of two minor courses of study. Work in the first of these minors will ordinarily extend over a period of two years. At least one of these minors must be taken in a department of the University other than that in which the major lies, and no two of the three subjects may be taken in chief part under the same instructor.

2. Not later than October 15 of the academic year in which the doctor's degree is to be taken, each candidate for the degree must submit to the Administrative Committee certificates from the departments of French and German of the University of Wisconsin, showing that he possesses a sufficient reading knowledge of these languages to use them for purposes of research in his major study.

3. On or before November 1 of the same year the candidate must file with the Chairman of the Administrative Committee the title of his proposed thesis, endorsed with the approval of the head of the department in which the thesis is to be taken, and the approval of the instructor with whom the work is to be done.

4. Each candidate for the doctor's degree must sustain an oral examination upon his thesis and upon the general work covered by his major and minor subjects, but a special written examination upon the second minor may be substituted for the oral examination upon the recommendation of the instructor in charge.

5. A fair copy of the thesis with an abstract of the same must be submitted to the Administrative Committee three weeks before the final oral examination is held. In exceptional cases, by consent of the Administrative Committee and upon the recommendation of the professor in charge of the major, the candidate for the doctor's degree may be permitted to take the general examination prior to the approval of the thesis, but the degree will not be conferred until the candidate has passed an oral examination upon

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the special field of his thesis, to be held when the thesis is approved.

6. Subject to the approval of the President of the University, the Chairman of the Administrative Committee will appoint an examining committee, usually composed of three persons, and will designate a time and place for the examination.

7. The successful candidate is required to put his thesis into print and to deposit *one hundred copies* of the same in the University Library. If the thesis is printed in some journal, or as a bulletin, reprints will be accepted for the library, but these must be provided with a special cover and title page in proper thesis form. The diploma may be conferred before the thesis is printed, provided a written or typewritten copy bearing the approval of the Administrative Committee is deposited with the University Librarian, and the sum of fifty dollars is deposited with the Secretary of the Regents as a guaranty of subsequent publication. This deposit will be refunded on presentation of the printed copies to the University Librarian.

FEES AND EXPENSES.

Graduate students, including those working *in absentia*, pay the same fees as undergraduates; but all fellows and University scholars are exempt from the non-resident tuition fee, and honorary fellows are exempt from the payment of both the non-resident tuition and incidental fees. For other details, see Fees and Expenses, p. 81.

COURSES FOR GRADUATES.

In all of the departments of the University courses are offered for undergraduates and graduates, and in many of them, courses primarily for graduates. These courses are described under the above headings in the departments of study in which they are offered in the College of Letters and Science, the College of Engineering, and the College of Agriculture.

SPECIAL ANNOUNCEMENT.

The special announcement of the Graduate School for 1905-06, giving detailed information concerning the school, may be obtained by applying to the Registrar of the University.

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DEGREES.

CONFERRED ON COMMENCEMENT DAY, 1904.

COLLEGE OF LETTERS AND SCIENCE.

Bachelor of Arts.

Allen Crossman Abbott.
John Bertram Andrews.
Amelia Alice Askew.
Elizabeth Barbara Augustine.
Arthur Herman Bartelt.
Carlotta McCutcheon Beatty.
Ransom Drits Bernard.
Ervin John Beule.
Loren Dwight Blackman.
Emmons Reed Blake.
James Bronson Blake.
Mabel Josephine Bradley.
Arthur Breslauer.
Ralph Dexter Brown.
Solon Justus Buck.
William Paul Bush.
Fred Kilburn Carrico.
William Peter Carroll.
Lucie Nell Case.
Matilda Helen Case.
Elsie Luella Coerper.
Mirah Congdon.
Maud Evlynn Conry.
Nettie May Cook.
Elva Cooper.
William Albert Cowell.
William Aloysius Cunneen.
Herman Ferdinand Derge.
Sarah Roselle Devlin.
Florence Adele Dodge.
Laura Edna Du Four.
Frank Julius Eaton.
Mary Amelia Egan.
Ole J. Eggum.
Ralph Burchard Ellis.
*Charlotte Wilmine Epstein.
Oscar Gustav Erickson.
Nellie Alpharetta Etter.
Lillian Helen Evans.
Magdalen Evans.
Mary Margaret Evans.
Donald Nivison Ferguson.
Henrietta Mae Findeisen.
Minna Evangeline Gath.
Mary Alice Gillen.
Mabel Goddard.
*George Ross Gove.
Edward Emerson Green.
Frank Berdette Green.
William Edward Henry Grove.
Regina Eunice Groves.
Frederike Barbara Haan.
Hovhan Hagopian.
Norma Catherine Halbach.
Berndt Severin Hale.
Kathryn Hall.
Margaret Spencer Hall.
Harriet Anne Harvey.
Isabel Harvey.
Winfred David Haseltine.
Bernice Clara Hatch.
John Gilbert Hayden.

*Degree conferred since Commencement, 1904.

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Amy Louise Hendrickson.
John Edward Howley.
Farnham Allen Hudson.
Fred Ralph Hunt.
Carl Frederick Huth.
James Hutton.
Frederic Clarence Inbusch.
Margaret Clarice Jackman.
Frances Sophia C. James.
James Charles James.
Henry Hans Jebens.
William Joseph Juneau.
Grace Maye Keating.
William Thomas Kelsey.
George Irving Kemmerer.
Elsie King.
Blanche Marie Kinne.
Hattie Kuhns.
William Kunerth.
Fola La Follette.
Clara Mary Lauderdale.
David Sydney Law.
Arthur Warner Lewis.
John Solon Lord.
William Ferdinand Luebke.
Charles Adelbert Lyman.
Earl Vinten McComb.
Bartie Eldred McCormick.
William Franklin McEldowney.
Carl Theophilus Madsen.
Frederick Alex. Manchester.
George John Marquette.
Victor Grant Marquissee.
Anna Magdalene Mashek.
Harriet Mason.
Edward Gustav Mattke.
*David Gallus Milbrath.
Marie Grace Miller.
Nelle Miller.
Maurice Winter Moe.
Florence Susannah Moffatt.
Thorina Olena Mortenson.
Kate Mutchler.
*Josephine Agnes Nalty.
Mary Lillian Nelson.
William Crane Nichols.
Lottie May Ogilvie.
Sophia Helen Olmsted.
Carrie Rosalind Paddock.
Benjamin Alexander Paust.
*Clifford Coleman Pease.
Delia Idell Pengra.
Ruth Mary Phillips.
Harry Ralph Pomeroy.
Ethel Ione Redfield.
Hugo Albert Rickeman.
Melinda Catherine Rider.
Amy Anna Robinson.
Mae Josephine Robinson.
Mary Christena Sands.
Frank Byron Sargent.
Daniel Leonard Schneider.
William Earle Schreiber.
*Paul Adolph Schule.
Georgia Mabel Shattuck.
Dale Curry Shockley.
James Chisholm Silverthorn.
Henry Walter Stark.
Meta Mary Steinfort.
Mary Holmes Stevens.
Robert George Stevenson.
Ruth Chafin Stockman.
*Adah Otilie Streeter.
*Jesse Dwight Suter.
Sarah Sayre Sutherland.
Lucien Samuel Sweet.
Kenneth Boyd Tanner.
Charles Arthur Taylor.

*Degree conferred since Commencement, 1904.

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Charles Austin Tibbals, Jr.
Lillian Rosalie Tompkins.
Pearl Esther Tompkins.
Frederick James Turner.
Lura Jane Turner.
William Urban.
Charles Anderson Urner.
Julius Herbert Warner.
Ada Mary Welsh.
Hudson Bernard Werder.
Orville William Wheelwright.
May Langdon White.
Roscoe Whitman.
Martha Taylor Whittier.
Elizabeth Wing.
Horatio Gates Winslow.
Gaius Sibley Wooledge.
Archie Garfield Worthing.
Edna Bertha Zinn.

COURSE IN COMMERCE.

*George Holmer Brownell.
Herbert Edgar Chynoweth.
Isaac James Dahle.
*Julius Ferdinand Derge.
Ernest Albert Edwards.
Morris Fuller Fox.
Elmer William Hamilton.
Albert George Hinn.
Charles William Meisnest.
Edwin Clark Osthelder.
*Louis Woodworth Parks.
Charles Harold Saucerman.
Paul Arthur Schedler.
Henry Elliott Shiels.
Eugene James Stephenson.
George Edwards Taylor.
Arthur Emil Thiede.

Bachelor of Philosophy in Pedagogy.

La Fayette Roswell Adley.
Margaret Eliza Ashmun.
*Carolyn Hall Bradley.
Ethelwyn Berenice Buck.
Lawrence Wylie Burdick.
William Lloyd Davis.
Frank Winsor Dunbar.
Huldah Bertha Hainke.
Winifred Emma Hale.
Mattie H. Love.
Gustaf Adolph Mattson.
Jessie Bee Merrick.
Alma Josephine Neuhaus.
Roy Theodore Nichols.
Elizabeth May Patten.
Peter Laurence Pease.
Mabel Deborah Pratt.
Asa Marshfield Royce.
Harvey A. Schofield.
John William Steenis.
*George Alan Works.

Bachelor of Science, Pharmacy Course.

Harry Briggs North.

Graduate in Pharmacy.

Alfred Henry Bauer.
Benton Bayard Byers.
Edwin Albert Hanson.
George Albert Joslin.

*Degree conferred since Commencement, 1904.

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Frank Bernard Creeden.
Andrew Grover Du Mez.
Fred Frank Schlei.
Harold Ironside Shaw.

COLLEGE OF ENGINEERING.

Bachelor of Science.

GENERAL ENGINEERING COURSE.

Arthur Joseph Bleser.
Edgar August Goetz.
Osmund Marcellus Jorstad.
Allan Lee.
Zadock Merrill.

CIVIL ENGINEERING COURSE.

Joseph Patrick Burns.
Perry John Carter.
Norman Philip Curtis.
Howard Louis Dessert.
Ernest James Fisher.
John Flaig.
Gustave Walter Garvens.
James Moseley Gilman.
Christian Frederick Graff.
Merton Glenn Hall.
Carl William Jenson.
Gustave Edmund Kahn.
William Spaulding Kinne.
Harry L. McDonald.
Ernest Anthony Moritz.
John Henry Neef.
Arthur William Nicolaus.
Edwin Horn Omara.
Ray Owen.
James Elmo Smith.
John George Staack.
Edward Everett Terrell.
Martin Wilhelm Torkelson.
Leslie Flanders van Hagan.
Henry Michael Warner.
Charles Thomas Watson.
Willis R. Whitby.

SANITARY ENGINEERING COURSE.

Joseph Inhoff Bingham.

MECHANICAL ENGINEERING COURSE.

Wallace James Benedict.
Ora Butler Cahoon.
Seymour Wyatt Cheney.
George Harvey Elvis.
Edward William Galloway.
Robert Gray Griswold.
William Henry Hauser.
John Sherman Hodge.
Don Clement Holloway.
Walter John Koch.
Donald MacArthur.
Edgar James Mac Eachron.
Louis Benjamin Moorhouse.
*Saradakis, Frank John.
Carl Frederick Stillman.
William Benedict Uihlein.

*Degree conferred since Commencement, 1904.

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ELECTRICAL ENGINEERING COURSE.

Fred Charles Almond.
Edwin Lamont Barber.
*Frank Herbert Blood.
William Bradford.
Charles Edward Carter.
Frederick Arthur Chamberlain.
William Jairus Crumpton.
Orlando Richard Erwin.
Donald Karne Frost.
Edwin Morgan Hall.
Frank Herbert Hanson.
*Robert Roy Henry.
Arthur Frederick Krippner.
Leigh Hunt Lathrop.
Norman Lee.
Francis Hayes Murphy.
Louis Frederick Musil.
James Marc Musser.
John Draper Noyes.
Frank Joseph Petura.
George Gilbert Post.
John Church Potter.
William Allard Rowe.
Harry Garfield Schwendener.
Frank Arthur Servis.
Edward Marvin Shealy.
William Franklin Sloan.
Arthur Thomas Stewart.
James Alexander Stewart.
John Robert Townsend.
Albert Philip Treber.
Max Albert Whiting.
Paul Frederick Zinke.

APPLIED ELECTROCHEMISTRY COURSE.

Jesse Ansalem Davidson.
Edward Zaremba.
James Garfield Zimmerman.

COLLEGE OF AGRICULTURE.

Bachelor of Science.

Herman Beckenstrater.
Llewellyn Rhys Davies.
James Garfield Fuller.
Elbert Lewis Jordan.
Fred Henry Knobel.
Amzi Chapin McLean.
Charles Louis Meller.
Carlos Arcadio Vallejo.

COLLEGE OF LAW.

Bachelor of Laws.

Paul Marie Binzel.
Chauncey Etheridge Blake.
Harry Ernest Bradley.
William Henry Brooke.
Albert Guy Chase.
Jay Chester Davis.
Morton Eugene Davis.
Robert Moses Davis.
John Scott Earll.
Michael Gustav Eberlein.
Oscar Gustav Erickson.
Lewis Magnus Evert.
Clarence Bennett Fisher.
Joseph Graham Fogg.
Walter Archer Frost.
Cecil Thomas Godwin.

*Degree conferred since Commencement, 1904.

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Leroy M. Green.
Harry Wilton Guipe.
Henry Joseph Hayes.
Walter Charles Hintze.
Philip Lehner.
William Thomas Lennon.
Charles Edward Lovett.
William Bertram Mallory.
Clarence H. Marsh.
Harry John Masters.
John Aloysius McCormick.
James Garfield McFarland.
Jay Addison McFarlane.
Israel Mather.
Claude C. Mills.
Arthur August Mueller.
Michael Balthasar Olbrich.
Edward Dennis Phelan.
Ralph Clair Pickering.
Thomas Mortimer Priestley.
Leo Reitman.
Alfred John Rhodes.
Zel S. Rice.
Robert Fred Riemer.
Henry Charles Rowan.
William Ryan.
John Flynn Sawyer.
Charles Francis Smith.
William Edward Smith.
Max Hugo Strehlow.
Clayton Elmore Udell.
Siegfried Fred Wetzler.
Frank Elisha Woodruff.
Morris Evans Yager.

SCHOOL OF MUSIC.

Graduate in Music.

Cordelia Endora Brattrud.
Cherstine Johnson.
Petra Elvina Kasberg.
Mathilde Louise Toepfer.
Meta Wagner.

HIGHER DEGREES.

Master of Arts.

*Friedrich Bruns, A. B. (Wartburg), in German Philology.
THESIS: Nietzsches Neubildungen.

Charlotte Alice Faber, B. A. (Wellesley College), in Economics and History.
THESIS: Ernest Jones and the Chartist movement.

Anna Bell King, B. L. (University of Wisconsin), in English Literature and History.
THESIS: Currents of modern English thought in the novels of Mrs. Humphrey Ward.

Bessie Susan King, B. L. (University of Wisconsin), in Latin and Greek.
THESIS: The ethics of Seneca's epistles.

Alfred Emil Kundert, B. S. (University of Wisconsin), in Organic Chemistry and Inorganic Chemistry.
THESIS: Contribution 18, the chemistry of sanguinarine and chelerythine.

*Degree conferred since Commencement, 1904.

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Annie Susan McLenegan, B. L. (University of Wisconsin), in English Literature and History.

THESIS: The epic as an expression of national consciousness.

*Raymond Burnette Pease, B. L. (University of Wisconsin), in English.

THESIS: The elements of orientalism in the English Romantic movement.

*George Matthew Reed, B. A. (Geneva College), in Botany.

THESIS: Infection experiments with Erysiphe graminis.

Rolla Gilbert Sears, B. L. (Christian University and Springfield College), in Hebrew and Arabic.

THESIS: Some modifications of the Hebrew vowel system as found in the Masoretic text of the Old Testament.

Ernst Arthur Stavrum, B. A. (University of Wisconsin), in Latin and Greek.

THESIS: Some evidences of a romantic element in Latin literature.

Mary Gertrude Hemenway Stoner, B. L. (University of Wisconsin), in Romance Languages.

THESIS: A study of George Sand's ideal woman.

Earle Melvin Terry, A. B. (University of Michigan), in Physics and Mathematics.

THESIS: The magnetic properties of cement.

Master of Science.

Joseph Frank Wojta, B. S. (University of Wisconsin), in Horticulture and Agricultural Chemistry.

THESIS: Plant breeding and some related phases of plant growth.

Master of Philosophy.

Alletta Friscone Dean, Ph. B. (University of Wisconsin), in Botany and English.

THESIS: The myxomycetes of Wisconsin.

Henry William Kircher, Ph. B. (University of Wisconsin), in Physics and Physical Chemistry.

THESIS: The effect of the nature of the discharge upon the spark spectrum.

Anne Holmquist McNeil, Ph. B. (University of Wisconsin), in English Literature and Pedagogy.

THESIS: Library reading in the grades and the high school.

*Degree conferred since Commencement, 1904.

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Civil Engineer.

Frederick Emil Schmitt, B. S. (University of Wisconsin).
THESIS: Some factors in urban rapid transit.

Electrical Engineer.

Lewis Augustus Terven, B. S. (University of Wisconsin).
THESIS: A study of illumination with especial regard to the Nernst lamp.

Charles Henry Williams, M. E. (University of Wisconsin).
THESIS: Development of practical economy in distributing electrical energy.

Doctor of Philosophy.

Charles Elmer Allen, B. S. (University of Wisconsin), in Plant Physiology, Plant Morphology, and Zoology.
THESIS: Nuclear and cell division in the pollen mother cells of Lilium canadense.

Williard Grosvenor Bleyer, M. L. (University of Wisconsin), in English Philology, English Literature, and Germanic Philology.
THESIS: The pejorative development in the meaning of English words.

James Ernest Boyle, A. M. (Kansas University), in Economics, Sociology, and American History.
THESIS: The financial history of Kansas.

Arthur Louis Breslich, A. B. (Berea College), in Hebrew, Hellenistic Greek, and Arabic.
THESIS: The strophic structure of Isaiah LIII.

Rollin Henry Denniston, B. S. (University of Wisconsin), in Plant Physiology, Plant Morphology, and Zoology.
THESIS: The structure of starch grain.

*Stephen Marshall Hadley, A. M. (Harvard University), in Astronomy.
THESIS: Relative masses of binary stars.

Marie McClernan, A. M. (University of Wisconsin), in Greek, Latin, and Comparative Philology.
THESIS: Periphrases in Thucydides.

Frederick William Meisnest, B. S. (University of Wisconsin), in German Literature, German Philology, and English Philology.
THESIS: Wieland und Eschenberg als Shakespeare Uebersetzer.

Susie Percival Nichols, B. S. (Cornell University), in Plant Physiology, Plant Morphology, and Entomology.
THESIS: The nature and origin of the binucleate cells in some Basidiomycetes.

*Degree conferred since Commencement, 1904.

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Charles James O'Connor, A. B. (University of Wisconsin), in Latin, Classical Archaeology, and Greek.

THESIS: The graecostasis of the Roman Forum and its vicinity.

*Hadley Winfield Quaintance, A. M. (University of Illinois), in Economics.

THESIS: The influence of farm machinery on production and labor.

Fritz Wilhelm Woll, M. S. (University of Wisconsin), in Agricultural Chemistry, Physiological Chemistry, and Dairy Husbandry.

THESIS: On the relation of food to the production of milk and butter fat by dairy cows.

HONORARY DEGREE.†

Doctor of Laws.

Henry Carter Adams,
Professor of Political Economy and Finance in the University of Michigan, and Statistician of the Interstate Commerce Commission.

Jane Addams,
Head Resident of Hull House.

James Burrill Angell,
President of the University of Michigan.

Henry Prentice Armsby,
Director of the Agricultural Experiment Station of the Pennsylvania State College.

Joseph Henry Beale, Jr.,
Professor of Law, and Dean of the Law School in the University of Chicago, and Bussey Professor of Law in Harvard University.

Alexander Campbell Botkin,
Chairman of the Commission to revise and codify the criminal and penal laws of the United States.

George Lincoln Burr,
Professor of Mediaeval History, and Librarian of the President White Library in the Cornell University.

*Degree conferred since Commencement, 1904.
†Conferred on the occasion of the Jubilee Celebration.

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Thomas Chrowder Chamberlin,
Professor and Head of the Department of Geology, and Director of Museums in the University of Chicago.

John Dewey,
Professor and Head of the Department of Philosophy, and Director of the School of Education in the University of Chicago.

William Gilson Farlow,
Professor of Cryptogamic Botany in Harvard University.

John Huston Finley,
President of the College of the City of New York.

Kuno Francke,
Professor of German Literature, and Curator of the Germanic Museum in Harvard University.

Grove Karl Gilbert,
Geologist, United States Geological Survey.

Daniel Coit Gilman,
President Emeritus of the Johns Hopkins University, and President of the Carnegie Institution.

William Rainey Harper,
President of the University of Chicago.

George Hempl,
Professor of English Philology and General Linguistics in the University of Michigan.

William Edwards Huntington,
President of Boston University.

Richard Henry Jesse,
President of the University of Missouri.

Theodor Lewald,
Imperial German Commissioner-General to the Louisiana Purchase Exposition.

Friedrich Wilhelm, Graf zu Limburg Stirum,
Commissioner-General of the German Educational Exhibit at the Louisiana Purchase Exposition.

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Franklin Paine Mall,
Professor of Anatomy in the Johns Hopkins University.

Edward Laurens Mark,
Hersey Professor of Anatomy, and Director of the Zoological Laboratory in Harvard University.

Eliakim Hastings Moore,
Professor and Head of the Department of Mathematics in the University of Chicago.

Alfred Noble,
Engineer.

Cyrus Northrop,
President of the University of Minnesota.

George Henry Noyes,
Ex-President of the Regents of the University of Wisconsin.

Samuel Lewis Penfield,
Professor of Mineralogy in Yale University.

William Peterson,
Principal and Vice-Chancellor of McGill University.

Herbert Putnam,
Librarian of Congress.

Auguste Rateau,
Professor in the Ecole Nationale Supérieure des Mines.

James Ford Rhodes,
Historian.

Albert Shaw,
Editor of the Review of Reviews.

Edgar Fahs Smith,
Vice-Provost and Professor of Chemistry in the University of Pennsylvania.

Reuben Gold Thwaites,
Secretary of the State Historical Society of Wisconsin.

Edward Bradford Titchener,
Sage Professor of Psychology in the Cornell University.

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*Adolph Wagner,
Professor von Staatswissenschaften, University of Berlin.

Benjamin Ide Wheeler,
President of the University of California.

James Wilson,
Secretary of Agriculture.

John Bradley Winslow,
Associate Justice of the Supreme Court of Wisconsin.

Robert Simpson Woodward,
Professor of Mechanics and Mathematical Physics, and Dean of the Faculty of Pure Science in Columbia University.

HONORS IN SPECIAL STUDIES.

Carlotta McCutcheon Beatty, in Latin.
THESIS: The influence of Theocritus upon Tennyson.

Solon Justin Buck, in American History.
THESIS: The settlement of Oklahoma.

Gustave Walter Garvens, in Civil Engineering.
THESIS: The location and construction of the Knoxville, La Follette and Jellico Railroad.

Berndt Severin Hale, in German.
THESIS: The influence of Ibsen on the beginnings of the modern realistic drama in Germany.

Winnifred Emma Hale, in European History.
THESIS: The attitude of the early Christian apologists toward the government.

Carl Frederick Huth, in European History.
THESIS: Otto von Freising, his citation and classical knowledge.

James Charles James, in American History.
THESIS: Calhoun and South Carolina from 1812 to 1832.

Frederick Alexander Manchester, in English.
THESIS: The influence of Molière on Dryden's comedy.

Melinda Catherine Rider, in Greek.
THESIS: The slave in Greek comedy.

George Edwards Taylor, in Economics.
THESIS: The past and future of the lumber supply.

*Degree conferred since Commencement, 1904.

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Martin Wilhelm Torkelson, in Civil Engineering.

THESIS: The location and construction of the Knoxville, La Follette and Jellico Railroad.

William Benedict Uihlein, in Mechanical Engineering.

THESIS: Efficiency test of the Joseph Schlitz Brewing Company's plant at Milwaukee, Wisconsin.

Charles Thompson Watson, in Civil Engineering.

THESIS: The location and construction of the Knoxville, La Follette and Jellico Railroad.

Archie Garfield Worthing, in Physics.

THESIS: The diathermancy of water to solar radiation.

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SUMMARY OF GRADUATES.

		1904.
Number of first degrees granted, 1854-1904.....	5435	354
Present Courses:		
Courses leading to the Degree of Bachelor of Arts, including Course in Commerce, 17, 1904	176	176
Course for Normal School Graduates, 1898-1904	156	21
Civil Engineering Course, 1873-1904.....	209	28
Mechanical Engineering Course, 1876-1904....	166	16
Electrical Engineering Course, 1892-1904.....	173	33
Applied Electrochemistry Course, 1903-1904...	6	3
General Engineering Course, 1901-1904.....	9	5
Law Course, 1869-1904.....	1597	50
Pharmacy Course, 1884-1904.....	236	9
Course in Agriculture, 1878-1904.....	31	8
School of Music, 1898-1904.....	46	5
Courses discontinued:		
Ancient Classical Course, 1854-1903.....	470	
Modern Classical Course, 1876-1903.....	547	
English Course, 1887-1903.....	458	
Civic Historical Course, 1893-1903.....	383	
General Science Course, 1886-1903.....	722	
School of Commerce (B.L., 8; B.S., 1), 1902-1903	9	
Normal Course, 1865-1868.....	25	
Metallurgical Engineering Course, 1876-1896...	16	
Higher Degrees on Examination, 1875-1904.....	365	31
Masters, 1879-1904.....	235	16
Engineers, 1875-1904.....	61	3
Doctors of Philosophy, 1892-1904.....	69	12

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STUDENTS.

GRADUATES.

Fellows and Scholars.

Blandin, Elsie Mae, *Western, Neb.*
B. A., University of Nebraska, Fellow in English.

Brandt, Joseph Granger,* *Allen Grove.*
Ph. B., Lawrence University, Scholar in Latin.

Breslich, Arthur Louis, *Madison.*
Ph. D., University of Wisconsin, Fellow in Hebrew and Hellenistic Greek.

Briggs, George Wesley, *Gaza, Ill.*
B. L., University of Wisconsin, Scholar in Hebrew and Hellenistic Greek.

Buck, Solon Justus,† *Berlin.*
B. A., University of Wisconsin, Fellow in American History.

Carlton, Frank Tracy, *Toledo, O.*
B. S., M. E., Case School of Applied Science, Fellow in Political Economy.

Cheney, Seymour Wyatt, *Fond du Lac.*
B. S., University of Wisconsin, Scholar in Mechanical Engineering.

Filbey, Edward J., *Appleton.*
B. A., University of Wisconsin, Fellow in Latin.

Gannaway, John Walter,‡ *Madison.*
B. A., University of Iowa, Fellow in Political Science.

Hale, Berndt Severin, *Waupaca.*
B. A., University of Wisconsin, Scholar in German.

Hastings, Harold Ripley, *Oregon, Ill.*
M. A., Harvard University, Fellow in Greek.

Hockett, Homer C.,‡ *Madison.*
B. L., University of Wisconsin, Fellow in American History.

Huth, Carl Frederick, *Milwaukee.*
B. A., University of Wisconsin, Scholar in European History.

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*Appointed February 13, 1905, to succeed Edward J. Filbey, promoted to the fellowship in Latin.
†Promoted February 13, from scholarship in American History to succeed Homer C. Hockett, resigned.
‡Resigned January 15, 1905.

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Ishizawa, Kyugoro,	*Fukushima, Japan.*	
M. A., University of Iowa,	B. K. Miller Japanese Scholar.	
Ingersoll, Leonard Rose,	*Denver, Colo.*	
B. S., Colorado College,	Fellow in Physics.	
Jorstad, Osmund Marcellus,	*La Crosse.*	
B. S., University of Wisconsin,	Scholar in Engineering.	
Kerr, William Dunton,*	*Oak Park, Ill.*	
B. A., Northwestern University,	Scholar in Political Economy.	
Lewis, Burdette Gibson,	*Omaha, Neb.*	
B. A., University of Nebraska,	W. J. Johnson Scholar in Economics.	
Luebke, William Ferdinand,	*Horicon.*	
B. A., University of Wisconsin,	F. W. Allis Graduate Scholar in German Philology.	
Manchester, Frederick Alexander,	*Richland Center*	
B. A., University of Wisconsin,	Scholar in English.	
Mangold, George Benjamin,	*Sprechts Ferry, Ia.*	
B. A., University of Nebraska,	N. A. Pennoyer Scholar.	
Marquette, William George,	*Madison.*	
B. S., University of Wisconsin,	Fellow in Botany.	
Marquisse, Victor Grant,†	*Altoona.*	
B. A., University of Wisconsin,	Fellow in Political Economy.	
McCutcheon, Leona E. F.,	*Thorndale, Ont.*	
B. A., Toronto University,	Scholar in Greek.	
McDaniel, Alonzo Simpson,	*Allegheny, Pa.*	
B. A., Wabash College,	Fellow in Chemistry.	
Moe, Maurice Winter,	*Milwaukee.*	
B. A., University of Wisconsin,	Scholar in Hebrew and Hellenistic Greek.	
Moritz, Ernest Anthony,	*Madison.*	
B. S., University of Wisconsin,	Scholar in Civil Engineering.	
Patterson, David Leslie,	*Lebanon, Ind.*	
B. S., Pennsylvania State College,	Fellow in European History.	
Pooley, William Vipond,‡	*Galena, Ill.*	
B. A., University of Illinois,	Scholar in American History.	
Pfund, Adolph,	*Madison.*	
B. A., University of Wisconsin,	Fellow in German.	
Phelan, Raymond Vincent,	*Cleveland, Ohio.*	
Ph. B., Western Reserve University,	Scholar in Political Economy.	

*Resigned February 18, 1905.
†Promoted January 15, 1905, from scholarship in Political Economy to succeed John W. Gannaway, resigned.
‡Appointed February 13, 1905, to succeed Solon J. Buck, promoted to the fellowship in American History.

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Sears, Rolla Gilbert, *Center, Mo.*
M. A., University of Wisconsin, Scholar in Hebrew and Hellenistic Greek.

Sellars, Roy Ward, *Pennebog, Mich.*
B. A., University of Michigan, Fellow in Philosophy.

Smith, Ernest Bradford,† *Madison.*
B. L., University of Wisconsin, Scholar in Political Economy.

Summer, Helen Laura, *Denver, Colo.*
B. A., Wellesley, Honorary Fellow in Political Economy.

Thompson, John Griffin, *Kipling, Ohio.*
M. A., Chicago University, Fellow in Political Economy.

Tormey, Thomas William, *Madison.*
B. S., University of Wisconsin,
M. D., Rush, Gustav L. Kletzsch Fellow in Bacteriology.

Watts, Oliver Patterson, *Thomastown, Me.*
M. A., Bowdoin College, Honorary Fellow in Engineering.

Williamson, Charles C.,‡ *Salem, Ohio.*
B. A., Western Reserve University, Scholar in Political Economy.

Other Graduates.

Adley, Lafayette Roswell, *Madison.*
Ph. B., University of Wisconsin, Geology.

Allen, Florence Eliza, *Madison.*
M. A., University of Wisconsin, Mathematics.

Allinger, Henry Wesley, *Madison.*
B. A., University of Wisconsin, German.

Anderson, Lewis Albert, *Mt. Horeb.*
B. L., University of Wisconsin, Political Science.

Anderson, William Ballantyne, *Madison.*
M. S., University of Wisconsin, Physics.

Angell, Martin Fuller, *Delavan.*
B. S., University of Wisconsin, Physics.

Barnett, James Duff, *Madison.*
B. A., College of Emporia, Political Science.

Bechtol, Nancy Martin, *Madison.*
M. D., University of Illinois, German.

Benner, Raymond Caldin, *Sauk Center, Minn.*
B. S., University of Minnesota, Chemistry.

†Elected January 15, 1905, to succeed Victor G. Marquissee, promoted to the fellowship in Political Economy.
‡Appointed January 15, 1905, to succeed William D. Kerr, resigned.

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Bishop, Edward Sherwood, *Somers.*
B. L., University of Wisconsin, Physics.

Boardman, Eliot, *Madison.*
B. A. Harvard University, French.

Bradley, Grace Marie, *Madison.*
B. L., University of Wisconsin, Pedagogy.

Bradley, Mabel Josephine, *Madison.*
B. A., University of Wisconsin, German.

Brandel, Irvin Walter, *Milwaukee.*
M. S., University of Wisconsin, Chemistry.

Brown, John Clarence, *Dexter, Ia.*
M. S., Iowa State College, Agricultural Chemistry.

Brown, Walter Sheldon, *Richburg, N. Y.*
B. S. A., Cornell University, Horticulture.

Bundy, Irving, *Osage, Ia.*
B. A., Colgate University, German.

Byers, Benton Bayard, *Munroe.*
Grad. in Pharm., University of Wisconsin, Botany.

Campbell, Elsa Patterson, *Madison.*
B. A., Barnard, Columbia University, Agriculture.

Carter, Charles Edward, *Milwaukee.*
B. S. in E. E., University of Wisconsin, Gas Analysis.

Chamberlain, Alice Emily, *Madison.*
B. L., University of Wisconsin, History.

Chynoweth, Herbert Edgar, *Madison.*
B. A., University of Wisconsin, Animal Husbandry.

Clark, Alfred Byron, *Beacon Falls, Ct.*
B. Agr., Connecticut Agricultural College, Animal Husbandry.

Crane, Austin Benjamin, *Brookings, S. Dak.*
M. S., Agricultural College, Hydraulic Engineering.

Commons, Ella Downey, *Madison.*
B. A., Oberlin, English.

Crawford, Clarence Cary, *Drexel, Mo.*
M. A., University of Kansas, History.

Davies, Llewellyn Rhys, *Madison.*
B. S. in Agr., University of Wisconsin. Animal Husbandry.

Dickinson, Thomas Herbert, *Madison.*
M. A., Columbia University, English Literature.

Eggers, Harold Everett, *Two Rivers.*
B. S., University of Wisconsin, Physical Chemistry.

Ellis, Edwin Erastus, *Evanston, Ill.*
B. A., Northwestern University, Geology.

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Goodnight, Scott Holland, *Madison.*
M. A., Eureka College, German.

Haertel, Martin Henry, *Madison.*
Ph. B., University of Chicago, German.

Haffner, Netta Wilhelmine, *Sturgis, Mich.*
B. S., University of Michigan, German.

Hale, Irma, *Canton, N. Y.*
B. S., Lawrence University, Home Economics.

Hall, Edward Bennington, *Springfield, Mo.*
B. S., Drury College, Geology.

Haney, Lewis Henry, *Normal, Ill.*
M. A., Dartmouth College, Political Economy.

Hastings, Edwin George, *Madison.*
M. S., University of Wisconsin, Bacteriology.

Haussmann, John Fred, *Madison.*
M. A., University of Wisconsin, German.

Holden, Roy Jay, *Sheboygan Falls.*
B. S., University of Wisconsin, Geology.

Holty, Joseph Gerard, *Madison.*
B. S., University of Wisconsin, Chemistry.

Hotchkiss, William Otis, *Madison.*
B. S., University of Wisconsin, Geology.

Howe, Agnes Emmons, *San Jose, Cal.*
B. A., Leland Stanford University, Political Economy.

Humphrey, May Martin, *Madison.*
B. A., University of Wisconsin, German.

Hutchins, Edgar Burton, *Madison.*
M. S., University of Wisconsin, Chemistry.

James, Frances Sophia Courtney, *Eau Claire.*
B. A., University of Wisconsin, English.

Johnson, Henry Theodore, *Lounsbury, Minn.*
B. S., Highland Park College, Mathematics.

Jones, Samuel Percy, *Atlanta, Ga.*
M. S., University of California, Geology.

Kamiyama, Bentara, *Higo, Japan.*
Grad. Chinzes Gakkwan College, Political Economy.

Kemmerer, George Irving, *Clinton Junction.*
B. A., University of Wisconsin, Chemistry.

Knight, Henry Seymour, *Troy, N. Y.*
B. A., Williams College, Hellenistic Greek.

Kundert, Alfred Emil, *Monroe.*
M. S., University of Wisconsin, Botany.

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Kyser, Henry Hearst,	*Talladega, Ala.*
M. E., Alabama Polytechnic Institute,	Electrical Engineering.
Laney, Francis Baker,	*Raleigh, N. C.*
B. S., Drury,	Geology.
Langemo, Peter Cornelius,	*Kenyon, Minn.*
B. L., University of Wisconsin,	Political Economy.
Leavitt, Orpha E.,	*Dousman.*
B. A., Doane College,	American History.
Lennon, Hawley Daniel,	*Decorah, Ia.*
B. S., University of Wisconsin,	Political Economy.
Lorenz, Max Otto,	*Madison.*
B. A., University of Wisconsin,	Political Economy.
Macnish, Ralph Benjamin,	*Berlin.*
B. L., University of Wisconsin,	Romance Languages.
Mangold, Salena Amelia,	*Specht's Ferry, Ia.*
B. A., Cornell University,	German.
Marsh, Jennette Eliza,	*Northfield, Minn.*
Ph. B., Oberlin College,	German.
Mathews, Joseph Howard,	*Madison.*
B. S., University of Wisconsin,	Chemistry.
McNeil, Anne Holmquist,	*Janesville.*
Ph. M., University of Wisconsin,	English.
Michels, John,	*Calvary.*
B. S. A., University of Wisconsin,	Bacteriology.
Moore, Joseph S.,	*Durant, Miss.*
M. S., Mississippi Agricultural College,	Animal Husbandry.
Morrill, Jenny Hughes,	*Scranton, Miss.*
B. L., University of Tennessee,	History.
Morse, Anson Ely,	*Amherst, Mass.*
M. A., Princeton University,	History.
Nakagama, Goro,	*Sasagama, Japan.*
Grad. Tokio Higher Commercial School,	Political Economy.
Nehls, Arthur Louis,	*Chicago, Ill.*
B. S., Northwestern University,	Chemistry.
Niedecken, Evelyn Marie,	*Milwaukee.*
B. A., Milwaukee Downer,	Chemistry.
North, Harry Briggs,	*Janesville.*
B. S., University of Wisconsin,	Chemistry.
Northrop, George Norton,	*Minneapolis, Minn.*
B. A., University of Minnesota,	English.
Oishi, Zenki,	*Kumamato, Japan.*
Grad. of Kumamato,	Political Economy.

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Parkinson, Anna Strong, *Madison.*
B. S., University of Wisconsin, Home Economics.

Patzer, Otto, *Wausau.*
M. L., University of Wisconsin, Romance Languages.

Pengra, Delia Idell, *Madison.*
B. A., University of Wisconsin, English.

Persons, Warren Milton, *Madison.*
B. S., University of Wisconsin, Political Economy.

Post, George Gilbert, *Madison.*
B. S. in E. E., University of Wisconsin. Electrical Engineering.

Potter, John Church, *Wauwatosa.*
B. S. in C. E., University of Wisconsin, Electrical Engineering.

Ranum, Blanche Hilme, *La Crosse.*
B. S., University of Wisconsin, Mathematics.

Rastall, Benjamin McKie, *Colorado Springs, Col.*
M. A., Colorado College, Political Economy.

Reed, George Matthew, *Madison.*
M. A., University of Wisconsin, Botany.

Roberts, Elizabeth, *Hazel Green.*
B. S., University of Wisconsin, History.

Robinson, Amy Anne, *Wyanet, Ill.*
B. A., University of Wisconsin, German.

Rodgers, Joseph Henry, *Charleroi, Penn.*
B. A., Northwestern University, Geology.

Rowe, William Allard, *Eau Claire*
B. S. in E. E., University of Wisconsin, Chemistry.

Ruff, Frederick George, *Ft. Atkinson.*
M. A., Northwestern University, German.

Seymour, Arthur Romeyn, *Madison.*
M. L., University of Wisconsin, Romance Languages.

Sherman, Helen, *Milwaukee.*
B. S. in Pharm., University of Wisconsin, Botany.

Shinn, Frederick Lafayette, *Montpelier, Ind.*
M. A., Indiana University, Chemistry.

Smiley, Charles Newton, *Madison.*
M. A., Harvard University, Latin.

Smith, Roger Green, *Washington, D. C.*
B. A., Cornell University, Chemistry.

Smith, William Noble, *Madison.*
B. L., LL. B., University of Wisconsin, Geology.

Stephens, George Ware, *Wapello, Ia.*
Ph. B., Iowa Wesleyan, Political Economy.

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Stephens, Mabel Eda, *Fennimore.*
B. L., Milwaukee Downer, History.

Stevens, Mary Holmes, *Rochester, N. Y.*
B. A., University of Wisconsin, Philosophy.

Stone, Charles Harry, *Reedsburg.*
B. L., University of Wisconsin, Political Economy.

Stone, Jesse Raymond, *Medford.*
B. A., University of Wisconsin, Mathematics.

Stromquist, Luther, *Madison.*
B. A., Bethany College, Political Economy.

Suter, Jesse Dwight, *Madison.*
B. A., University of Wisconsin, Mathematics.

Suydam, Vernon Andrew, *Waupaca.*
B. L., University of Wisconsin, Physics.

Tibbals, Charles Austin, Jr., *Ashbury, N. Y.*
B. A., University of Wisconsin, Chemistry.

Tuthill, James Edward, *Madison.*
M. A., University of Missouri, History.

Veatch, Otto, *Alba, Mo.*
B. A., University of Missouri, Geology.

Vinson, Albert Earl, *Dayton, Ohio.*
Ph. D., Gottingen, Germany, Dairy and Animal Husbandry.

Vorhies, Charles Taylor, *Mt. Pleasant.*
B. S., Iowa Wesleyan, Zoology.

Warner, Julius Herbert, *Windsor.*
B. A., University of Wisconsin, Geology.

Wegemann, Carroll Harvey, *Lake Mills.*
B. S., University of Wisconsin, Geology.

Wolff, Henry Charles, *Madison.*
M. S., University of Wisconsin, Mineralogy.

Worthing, Archie Garfield, *Oakfield.*
B. A., University of Wisconsin, Physics.

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UNDERGRADUATES.

College of Letters and Science.

SENIOR CLASS.

Abaly, Elizabeth, *Madison.*
Abbott, Chauncy, Jr., *Schuyler, Neb.*
Allen, Amy, *Milwaukee.*

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Allen, David King,	*Allenville.*
Allen, Iva Clair,	*Madison.*
Allen, Rolland Craten,	*Dayton.*
Allen, Ruth Florence,	*Sturgeon Bay.*
Anthony, Rowland Barney,	*Kewaunee, Ill.*
Arvold, Alfred Gilmeiden,	*Whitewater.*
Baker, Frances May,	*Madison.*
Baker, John Franklin,	*Alma Center.*
Ballantyne, Edith Virtue.	*Bloomington.*
Barber, George Stanley,	*Lawton, Okla.*
Barnard, Elizabeth,	*Earlville, Ill.*
Barney, Godfrey Waldo,	*Mauston.*
Barry, John Sumner,	*Phillips.*
Bartlett, Edwin Ball,	*Milwaukee.*
Beaver, Grace May,	*Baraboo.*
Bell, Marion Caroline,	*Milwaukee.*
Berg, Lily Leighty,	*Madison.*
Bernard, Anna Katherine,	*Galena, Ill.*
Bird, Wayne Doty,	*Madison.*
Bogue, David,	*Poynette.*
Bolte, Rudolph Emil,	*Dovenport, Ia.*
Brahany, Kathryn Isabel,	*Madison.*
Breuning, William Hobart,	*Columbus.*
Broenniman, Leonard Edwin,	*Watertown.*
Brush, Jesse Platt,	*Stewartville, Minn.*
Buehler, Elizabeth,	*Monroe,*
Chinnock, Mabel Amy,	*Hudson.*
Christensen, Vera Marie,	*Baldwin.*
Clark, Arthur John,	*Janesville.*
Cline, Genevieve Elida,	*Hudson.*
Coffin, Margaret Ellen,	*Eau Claire.*
Cole, Julia Ann,	*Milwaukee.*
Concklin, Esther Rachel,	*East Troy.*
Confer, Francis Marion,	*Madison.*
Cook, Eudora Idalia,	*Lake Mills.*
Cook, Henry Allen,	*Madison.*
Coonen, John Edgar,	*South Kaukauna.*
Cooper, Cornelia Lida,	*Madison.*
Corlett, Ralph,	*Harvard, Ill.*
Cowles, Herbert Van,	*Madison.*

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Crane, Guy Walter,	*Milwaukee.*
Crawford, David Anderson,	*St. Louis, Mo.*
Creutz, Lester,	*Moline, Ill.*
Cross, Ira Brown,	*Madison.*
Daniells, John Eckley,	*Madison.*
Darling, Walter Gregory,	*Milwaukee.*
Dean, Albert Briggs,	*Madison.*
Donley, Julia Anna,	*Kenosha.*
Elliott, Isaac,	*Menomonie.*
Ellis, Grace Victoria,	*Bristol.*
Faller, Phoebe Maud,	*Madison.*
Faust, Howard Harry,	*Merrill.*
Fisher, Arthur Oscar,	*Baraboo.*
Foley, Elizabeth Viola,	*Wauwatosa.*
Foster, Albert William,	*Milwaukee.*
Fryette, Leora Blanche,	*Madison.*
Fuller, Litta Maurie,	*Plymouth.*
Fulton, David Langdon,	*Hudson.*
Geisse, Harold Llewellyn,	*Chilton.*
Gilkey, George Leland,	*Oshkosh.*
Gratiot, Charles Gross,	*Shullsburg.*
Green, Alice Evangeline,	*Fond du Lac.*
Griggs, Victor Rockwell,	*Madison.*
Grinde, Hilda Christine,	*Madison.*
Griswold, Willard Seward,	*Waukesha.*
Haertel, Lillian Emilie,	*Madison.*
Hannahs, Charlotte Eva,	*Kenosha.*
Hansen, Dagmar,	*Racine.*
Hardenberg, Christian Bernhardus,	*Madison.*
Harder, Edmund Cecil.	*Milwaukee.*
Harrison, Edna Lucretia,	*Madison.*
Harvey, Katherine Mary,	*Madison.*
Hawkins, Horatio Bates,	*Atchinson, Cal.*
Helmholtz, Anna Augusta,	*Madison.*
Hendrickson, Norman,	*Albion.*
Herdegen, Robert Townsend,	*Milwaukee.*
Higgs, Walter,	*Advance, Ind.*
Homberger, Alfred Wilhelm,	*Sauk City.*
Huebner, Grover Gerhard,	*Manitowoc.*
Jaeck, Ora Mabel,	*Omro.*

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Jahr, Marvin Edward,	*Neillsville.*
James, Albert Earl,	*Madison.*
Jamieson, Gerald William,	*Shullsburg.*
Johnson, Edith,	*Kokomo, Ind.*
Johnson, Martha Frances,	*Kokomo, Ind.*
Johnson, Una Lone,	*Madison.*
Johnstone, Albert Henry,	*Merrimack.*
Johnston, John Thor,	*Milwaukee.*
Jones, Gwendolyn Gaynor,	*Madison.*
Jones, Ida Isabelle,	*Plymouth.*
Jones, Marion Burr,	*Madison.*
Jordan, Edward Stanlaw,	*Milwaukee.*
Katz, Frank James,	*Milwaukee.*
Kelley, Chase William,	*Madison.*
Kemler, Clara,	*Platteville.*
Kennedy, Bess G.,	*Neillsville.*
Klahr, Florence Marie,	*Horicon.*
Krause, Anne Adeline,	*Sauk City.*
Lachmund, Bruno,	*Sauk City.*
Larsen, Karen,	*Decorah, Ia.*
Lea, Clara Alice,	*Madison.*
Lindsay, Herbert Frank,	*Milwaukee.*
Loeb, Max,	*Appleton.*
Lorch, Augusta Christine,	*Madison.*
Mac Graw, William Don,	*Chippewa Falls.*
Mahon, Thomas Joseph,	*Milwaukee.*
Manz, Matilda Helena,	*Madison.*
Martin, Grace,	*Waupun.*
McCulloch, Sadie,	*Madison.*
McGillivray, William J.,	*Black River Falls.*
McGoorty, Anne,	*Chicago, Ill.*
Middleton, Eliza Evelyn,	*Oak Park, Ill.*
Miltenberger, Robert Edgar,	*Randolph.*
Miner, Ruth Pauline,	*Madison.*
Moffatt, John James,	*Davenport, Ia.*
Moore, Ethel Edna,	*Merrilan.*
Morse, Jessie Marietta,	*Madison.*
Morse, Sarah Duncan,	*Amherst, Mass.*
Neilson, George Whittier,	*Milwaukee.*
Nelson, Tillie Eliza,	*Madison.*

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Norsman, Cora Miriam,	*Madison.*
Olbrich, Emil,	*Harvard, Ill.*
Pallansch, Arthur John,	*Fredonia.*
Parker, Madge Mary,	*Mason City, Ia.*
Parsons, Forest Lee,	*Berlin.*
Paulson, Henry Olaus,	*Perry.*
Pengra, Marshal Hylon,	*Madison.*
Persons, Archie Lee,	*Arkansaw.*
Pfeifer, Fred Julius,	*Plymouth.*
Pfund, Carl Frederick,	*Madison.*
Phelan, Ruth Lincoln,	*Dickinson, N. Dak.*
Pickert, Jared Curtis,	*Berlin.*
Pietzsch, Harriet Shumway,	*Baraboo.*
Playter, James Andrew,	*Eau Claire.*
Pritchard, George Scott,	*Aurora, Ill.*
Purcell, John Daniel,	*Waterloo.*
Rathjen, Edwin Frederic,	*Milwaukee.*
Reineking, Walter Clarence,	*Sheboygan.*
Reiss, Wallace,	*Milwaukee.*
Rhoades, Ellen May,	*Fond du Lac.*
Rice, Claudia Bee,	*Davenport, Ia.*
Riess, Minnie Margaret,	*Sheboygan.*
Rogers, Althea Tooker,	*Milwaukee.*
Rogers, Faye Valeria,	*Clinton.*
Rohr, Ilma Margaret,	*Milwaukee.*
Runge, Lulu Lillian,	*Madison.*
Saemann, Mabelle Oletta,	*Plymouth.*
Salter, Richard Grover,	*Colby.*
Schmitt, Ella,	*Green Bay.*
Schmidt, Richard August,	*West Depere.*
Schmoyer, Winnie Victoria,	*Menomonee Falls.*
Schreiber, Cecil Earl,	*Madison.*
Scott, Julia Marion,	*Poynette.*
Sell, Martha Erbach,	*New Holstein.*
Shattuck, Fredrica Van Fries,	*Medford.*
Shea, Eugenie Elinor,	*Ashland.*
Shunk, Oral Jessie,	*Davenport, Ia.*
Smythe, Edwin Willis,	*Madison.*
Sprecher, John Henry,	*Independence.*
Stephens, Jean Murray,	*Madison.*

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Stiles, Nestor Luvern,	*Cherokee, Ia.*
Stott, Florence Daisy,	*Winona, Minn.*
Strehlow, Ida Elizabeth,	*Ft. Atkinson.*
Strong, Ethel May,	*Aurora, Ill.*
Sullivan, Clara Gertrude,	*Chicago, Ill.*
Tarbox, Edna Laura,	*La Crosse.*
Taylor, Lillian Elizabeth,	*Madison.*
Thompson, Robert Kirk,	*Milwaukee.*
Truckenbrodt, Lina,	*Sauk City.*
True, Eunice Miriam,	*Baraboo.*
Urquhart, Marion Estella,	*Medford.*
Vaughan, May Constance,	*Milwaukee.*
Vea, Elleda Johnson,	*Stoughton.*
Veatch, Arthur Clifford,	*Madison.*
Venus, Helen Marie,	*Shawano.*
Wagner, Rose May,	*Menasha.*
Waite, Dawn,	*Belvidere, Ill.*
Walsh, Agnes Louise,	*Milwaukee.*
Wells, Grace,	*Aurora, Ill.*
Welton, Chauncey Rex,	*Madison.*
Weniger, Willibald,	*Milwaukee.*
White, Herford,	*Delafield.*
Wichmann, Hugo John,	*New Holstein.*
Williams, Elmer Howard,	*Soldiers Grove.*
Wilson, Leta May,	*Boscobel.*
Woock, Grace Genevieve,	*Baraboo.*
Zeiher, Emeline Elizabeth,	*West Bend.*

Course in Commerce.

Braley, Arche Berton,	*Madison.*
Carey, John Greer,	*Bloomington.*
Cook, Leo Marshall,	*Madison.*
Crocker, Frank Albert,	*Neillsville.*
Feldkamp, Bernard Eilart,	*Danville, Ill.*
Hayes, Joseph Dennis,	*Janesville.*
Kennedy, James Eugene,	*Madison.*
Landt, Ernest Wilber,	*Milwaukee.*
Mills, Clifford Wilde,	*Denver, Colo.*
Neckerman, Reuben Julius,	*Madison.*
Parks, Lewis Woodworth,	*Watertown.*
Schriber, Rufus Kellogg,	*Oshkosh.*

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Seidenglanz, Emil Telesfore,	*Kewaunee.*
Sharp, Robert Nicholson,	*Chicago, Ill.*
Turner, Louis Howard,	*Mondovi.*
Usher, Robert James,	*South Wayne.*
Wheelock, Harry Ellsworth,	*South Bend, Ind.*
Young, Edwin George,	*Beaver Dam.*

Course for Normal School Graduates.

Allen, Daisy May,	*Allenville.*
Baker, John Earl,	*Eagle.*
Bemis, Florence Irene,	*Oshkosh.*
Bergen, Paul,	*Richwood.*
Bronsky, Amy Angela,	*Chippewa Falls.*
Burnett, Eleanor Louise,	*Madison.*
Carey, Katharine Lee,	*Bloomington.*
Carlsen, Alvin Louis,	*Blanchardville.*
Colburn, Willis Paul,	*Cassville.*
Comstock, Effie,	*Milwaukee.*
Eaton, Genevieve May,	*Superior.*
Ekern, Helga Maria,	*Madison.*
Erickson, Edward,	*Edinburg, N. Dak.*
Fitz-Gerald, Helen Elizabeth,	*Oconomowoc.*
Gallagher, Bernard John,	*Oconto Falls.*
Grindell, John Le Roy,	*Platteville.*
Hacker, Henry Christian,	*Hortonville.*
Hanville, Merrill Francis,	*Portland, Oregon.*
Hayes, Maud,	*Oconomowoc.*
Mac Arthur, Mary,	*Superior.*
Milne, William,	*Elroy.*
Moulton, Lewis Henry,	*Oshkosh.*
Rawson, John Lupton,	*Platteville.*
Rounsevell, Bessie Lucy,	*River Falls.*
Sabin, Lilian,	*Milwaukee.*
Stivers, Samuel Antes,	*Madison.*
Upham, Emily Woods,	*Whitewater.*
Vognild, Selma Marie,	*Chicago, Ill.*
Walker, Ellis Janet,	*Fond du Lac.*
Zuppke, Robert Charles,	*Milwaukee.*

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JUNIOR CLASS.

Adams, Bessie Eliza,	*Madison.*
Allen, Henry Coburn,	*Indianapolis, Ind.*
Allen, Josephine Holcomb,	*Lake Geneva.*
Ames, Ada Dell,	*Menominee.*
Apple, Harry Aubrey,	*Milwaukee.*
Atwood, Walter Myron,	*Madison.*
Baas, Alexius Henry,	*Madison.*
Bagley, Zillah Julia,	*Madison.*
Baker, John Sydney,	*Osseo.*
Barker, Charles Perley,	*Chippewa Falls.*
Berg, Jettie Emerle,	*Poplar Grove, Ill.*
Binnie, Nora Isabelle,	*Poynette.*
Birge, Anna Grant,	*Madison.*
Bishop, Charles Clyde,	*Dodgeville.*
Bissell, Cora Ethel,	*Madison.*
Blachley, Marguerite Dolzell,	*Spring Valley, Ill.*
Blanchard, George Washington,	*Colby.*
Brey, Peter Francis,	*Algoma.*
Bridgman, Louis William,	*Madison.*
Brindley, William Arthur,	*Boscobel.*
Buchanan, Iva Luella,	*Rio.*
Burgess, Ida Martha,	*Sharon.*
Burnham, Marguerite Eleanor,	*Madison.*
Campbell, Robert,	*Gurnee, Ill.*
Cann, Adeline,	*Seattle, Wash.*
Case, Florence Dombey,	*West Allis.*
Cass, Lulu Edith,	*Madison.*
Chadwick, Howard William,	*Monroe.*
Clifford, Cecil Leslie,	*Madison.*
Clifton, Winnifred,	*Madison.*
Corse, Ellen Jessie,	*Racine.*
Cunningham, Isabel Margaret,	*Chippewa Falls.*
Curtiss, Mildred Harriet,	*Madison.*
Davidson, Mabel Elsie,	*Madison.*
Davis, Bertha Eleanor,	*Madison.*
De Lacy, John Byron,	*Viroqua.*
Delap, Darwin,	*Kansas City, Mo.*
De Lap, Florence May,	*Maywood, Ill.*
Dexter, Elise Forsythe,	*Madison.*

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Dietz, Arthur,	*Mayville.*
Distelhorst, Walter Louis William,	*Dorchester.*
Dodge, Charles Wilson,	*Windsor.*
Dodge, Mary Louise,	*Windsor.*
Donovan, Margaret Monica,	*Madison.*
Dousman, Margaret Elizabeth,	*Milwaukee.*
Draves, Minnie Theresa,	*Milwaukee.*
Duke, Henry Clay,	*Madison.*
Dunlap, Robert Bancroft,	*Waukesha.*
Dunwiddie, Stanley Gray,	*Janesville.*
Durst, May Louise,	*Monroe.*
Evans, Alice Esther,	*Spring Green.*
Evert, Karl,	*Madison.*
Falk, Rolf Orlando,	*Stoughton.*
Fay, Margaret Marion,	*Madison.*
Fenton, Polly,	*Madison.*
Fessler, Edward John,	*Sun Prairie.*
Findlay, Albion Garfield,	*Madison.*
Fisher, Eunice Estella,	*Steward, Ill.*
Fridd, Blanche,	*Valley City, N. Dak.*
Fries, Jane Grace,	*Richland Center.*
Fruit, Clarence Henry,	*La Crosse.*
Gapen, Mildred Kegonsa,	*Madison.*
George, Katharine Ethel,	*Monticello, Ia.*
Gilmore, Grace Allen,	*Auburn, Neb.*
Glenz, Emma Louise,	*Madison.*
Godwin, Ethel Isabelle,	*Berlin.*
Gordon, Mabel Jean,	*Waupaca.*
Grant, Kate Goldie,	*Milwaukee.*
Hall, Edgar Albert,	*Omro.*
Hammersley, Ellen,	*Madison.*
Hannan, George Francis,	*Milwaukee.*
Harvey, Elizabeth Katherine,	*Racine.*
Hean, Clarence Scott,	*Madison.*
Heinemann, Fred,	*Wausau.*
Herrick, Lucretia Mae,	*Ripon.*
Hetzel, Ralph Dorn,	*Madison.*
Hickisch, Tessa Francis,	*La Crosse.*
Hirshberg, Henry Adler,	*Milwaukee.*
Holmes, Frederick Lionel,	*Waukau.*
Holthoff, Ella Gertrude,	*Ripon.*

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Hopson, Howard Colwell,	*Madison.*
Houghton, Grace Adams,	*West Salem.*
Howard, Emmett Budlong,	*Marshalltown, Ia.*
Hueffner, Martin Matthew,	*Racine.*
Hunter, Bernice Drew,	*Fort Atkinson.*
Hunter, Gertrude Hazel,	*Racine.*
Hutchcroft, Lester William,	*Glen Haven.*
Hutton, Annabel MacGregor,	*Waukesha.*
Ingalls, Edna Jannet,	*Menomonie.*
Jahns, Louise Marie,	*Milwaukee.*
Johnson, Francis Ellis,	*Des Moines, Ia.*
Johnson, Ida Petrine,	*West Salem.*
Johnson, Jessie Vera,	*Eau Claire.*
Johnson, Marjorie Daw,	*Madison.*
Jolivette, Hally Delilia Mary,	*La Crosse.*
Kadish, Victor Hugo,	*Milwaukee.*
Ketchpaw, Erma Louise,	*Madison.*
Ketchpaw, Maud Luella,	*Madison.*
Kimball, Euretta Mary,	*Janesville.*
King, Clarence Baker,	*Madison.*
Kissling, Arthur Charles,	*Milwaukee.*
Klingholz, Oscara,	*Manitowoc.*
Knowlton, Philip Arnold,	*Madison.*
Knudson, Agnes Caroline,	*Madison.*
Koch, Edna May,	*Fairdale, Ill.*
Kroehnke, Adalia Laurentine,	*Thiensville.*
Kuhlman, Charles Byron,	*Wausau.*
Kümmel, Julius Frank,	*Milwaukee.*
Kussel, Irma Lizette,	*Watertown.*
Lackner, Helen Florence,	*Aurora, Ill.*
Lamfrom, Leon Benedict,	*Milwaukee.*
Lawson, Laura Lou,	*Madison.*
Loranger, Madge Winifred,	*Ashland.*
Lyon, Ruth Erma,	*Madison.*
MacKenzie, Fred William,	*Blue Mounds.*
MacMillan, Maud Ethel Jane,	*Wauwatosa.*
Mapel, John Wallace,	*Milwaukee.*
Mason, Ora Lottie,	*Sharon.*
McConochie, George Stewart,	*Cambria.*
McCormick, Edith Traftan,	*Sparta.*
McKay, Sara Roxey,	*Madison.*

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McLean, Marguerite Louise,	*Menomonie.*
McRae, Mary Ethel,	*Rhinelander.*
Meadows, Orley James,	*Oconomowoc.*
Miller, Adelaide,	*Chippewa Falls.*
Minch, Katharine Salome,	*Madison.*
Morse, Nona Troy,	*Madison.*
Mowry, Don Ensminger,	*Milwaukee.*
Mulcahy, Max John,	*Madison.*
Mulick, Marion Gray,	*Watertown.*
Munson, Barbara Merrielle,	*Viroqua.*
Newman, Ross Byron,	*Juda.*
Noyes, Roy Enoch,	*Baraboo.*
Olmsted, Lewis William,	*Madison.*
Olsen, Laura Marie,	*Eau Claire.*
Orr, Owen Cargill,	*St. Joe, Mo.*
Osgood, Esse Irene,	*Madison.*
Ott, Edwin,	*Oak Park, Ill.*
Otto, Maxwell Charles,	*Waukesha.*
Patterson, Anna Louise,	*North Freedom.*
Patterson, Walter La Fayette,	*Baraboo.*
Peckham, George William, Jr.,	*Milwaukee.*
Poole, DeWitt Clinton, Jr.,	*Superior.*
Potter, Herman Monroe,	*Madison.*
Potter, Paul David,	*Madison.*
Ranum, Louise Cann,	*Madison.*
Ravn, Agnes,	*Merrill.*
Ray, George Rankin,	*Waukesha.*
Reid, Alice Jane,	*Oconomowoc.*
Remp, Richard William,	*Madison.*
Richards, Clara Alida,	*Madison.*
Richardson, Clarence Lemuel,	*Chippewa Falls.*
Rietow, Florence Georgiana,	*Sheboygan.*
Risley, Guy Franklin,	*Baraboo.*
Roberts, Agnes Ida,	*Milwaukee.*
Roderick, Lyman,	*Brodhead.*
Rogers, Bertha Harriett,	*Port Byron, Ill.*
Rohr, Ilma Margaret,	*Milwaukee.*
Rosenheimer, Alexander Benjamin,	*Schleisingerville.*
Rosenstengel, Helen Alice,	*Madison.*
Rostad, Magdalene,	*Milwaukee.*

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Rudolph, Florence Anne,	*Canton, S. Dak.*
Ruggles, Allen Mead,	*Norwich, N. Y.*
Runge, Alma Mathilda,	*Madison.*
Ruste, Anne,	*Charles City, Ia.*
Ryan, Marion Eva,	*Wausau.*
Sanborn, Norman Walker,	*Ashland.*
Sands, Mamie Alice,	*Dodgeville.*
Schoephoester, Albert John,	*Reedsburg.*
Schorer, Arno Robert,	*Plymouth.*
Schrage, Jennie Thayer,	*Sheboygan.*
Schram, Peter Henry,	*Madison.*
Scott, Fern,	*Sparta.*
Seamans, Herbert Lyle,	*Springfield, Mo.*
Sleep, Walter I.,	*Waukesha.*
Smith, Osmore Ray,	*Sparta.*
Steidtmann, Edward,	*Prairie du Sac.*
Stevens, Meda Bee,	*Evansville.*
Stockmann, Rebecca,	*Milton Junction.*
Stone, Anna Louise,	*Reedsburg.*
Strass, Edward Marlowe,	*Milwaukee.*
Strassburger, Erma Dorothea,	*Cedarburg.*
Stroud, Perry Curtis,	*Portage.*
Sutherland, Ella,	*Janesville.*
Swenson, Mary Waddington,	*Madison.*
Taylor, Lily Ross,	*Madison.*
Thomas, Mary Ella,	*Berlin.*
Thursby, Cordelia Claire,	*Madison.*
Thwaites, Frederick Turville,	*Madison.*
Tirrill, Marie Edith,	*Madison.*
Tobenkin, Elias Isaac,	*Madison.*
Tormy, Julia Florence,	*Madison.*
Turvill, Helen,	*Madison.*
Twesme, Albert Theodore,	*Blair.*
Van Horn, Frank Benjamin,	*Omaha, Neb.*
Van Velzer, Marion,	*Madison.*
Walsh, William Thomas,	*Dubuque, Ia.*
Washburn, Martha Lucile,	*Sturgeon Bay.*
Waterbury, Mary Edith,	*Prairie du Sac.*
Watrous, Maud Evangeline,	*Milwaukee.*
Weatherlow, Guy Porter,	*Madison.*

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Whaley, Clyde Holden,	*Waupun.*
White, Rhoda Mabel,	*Madison.*
Whitehead, Lucretia Flemming,	*Golden, Colo.*
Whitney, Helen Goldsmith,	*Madison.*
Whittaker, Harold Arthur,	*Oconomowoc.*
Whittier, Rowena Maud,	*Madison.*
Wilke, Ada Dorothy,	*Union Grove.*
Williams, Arthur James,	*Albany.*
Young, Gertrude Stickney,	*Plankington, S. D.*

Course in Commerce.

Anderson, Louis Martin,	*Mt. Horeb.*
Arnold, Marshall,	*Peotone, Ill.*
Barrett, William Richard,	*Merrill.*
Berge, Matthew Garland,	*Eau Claire.*
Collie, Ralph Waldo,	*Merrill.*
Conway, Thomas,	*Elroy.*
Crissey, Merrill Henry,	*Janesville.*
Dahl, Harry Julius,	*Westby.*
Emerson, Frank Gilbert,	*Chippewa Falls.*
Gilfillan, William Ray,	*La Crosse.*
Hoefs, Marcus Franklin,	*Green Bay.*
Houghton, Hiram Cole,	*Red Oak, Ia.*
Huffner, Frederick William,	*Racine.*
Kinsey, Zebulon Bradley,	*Madison.*
Kremer, Paul Henry,	*Milwaukee.*
Kuehmsted, Arthur Odin,	*Appleton.*
Latshaw, Stanley Riddle,	*Wausau.*
Lehmann, William Van Vechten,	*Neosho.*
Lewis, Gordon Morris,	*Highland.*
Lindemann, Albert Louis,	*Milwaukee.*
Morrison, Robert Angus,	*Seattle, Wash.*
Nadler, John Fred,	*Verona.*
Nelson, Charles Edward,	*Superior.*
Peterson, Nels John,	*East Marinette.*
Roderick, Benjamin Hur,	*Brodhead.*
Sackett, Edwin Hiram,	*Fond du Lac.*
Slagsvol, Thomas Richard,	*Eau Claire.*
Sprecher, Walter E.,	*Independence.*
Strong, Arthur,	*Dodgeville.*
Wells, Hugo Smith,	*De Pere.*

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Course for Normal School Graduates.

Artzberger, Emil Godfred,	*Helenville.*
Barber, Carrie Louise,	*Gardner, Ill.*
Becher, Max Albert,	*Milwaukee.*
Bewick, Thomas Lyman,	*Madison.*
Clifton, Archie Roy,	*Lancaster.*
Cole, Adrian H.,	*Rio.*
Daniells, Maud,	*River Falls.*
Davee, Henry W.,	*Chinook, Mont.*
Fadner, Lydia Elizabeth,	*Superior.*
Goebel, Joseph Paul,	*Dotyville.*
Godfrey, Myrtle Vida,	*Whitewater.*
Hagberg, John Bernhard,	*Superior.*
Halsey, Cora Moore,	*Oshkosh.*
Hamilton, Frederic Rutherford,	*Richland Center.*
Harrison, William Crane,	*Augusta.*
Henderson, Leonora Louise,	*Cambridge.*
Hewitt, Myra Bertha,	*Oshkosh.*
Howell, Daniel Benjamin,	*Dousman.*
Jones, George James,	*Oconomowoc.*
Karges, Rudolph Andrew,	*Burlington.*
Kreutz, Emma Lydia,	*Darlington.*
Lerom, Bertha,	*Buxton, N. Dak.*
Lerom, Hattie,	*Buxton, N. Dak.*
Luening, Edwin Garfield,	*Milwaukee.*
Melcher, Henry Alberto,	*Oconomowoc.*
Rodolph, Garth Charles,	*Montfort.*
Roets, Francis Peter,	*Watertown.*
Seaver, Jessie Victorine,	*Lake Mills.*
Skinrood, Carl Oscar,	*Woodford.*
Spooner, Fannie Lynn,	*Durand.*
Stewart, Mabel,	*Fargo, N. Dak.*
Strange, Ethel Margaret,	*Oshkosh.*
Stroebel, Leonard Augustus,	*Barron.*
Sutherland, Margaret,	*Eau Claire.*
Wagner, Nicholas Bacon,	*Menasha.*
Weiland, Louis Emil,	*Baraboo.*
Whitney, Elizabeth Day,	*Madison.*
Wickersham, Jessie Lettitia,	*Platteville.*
Young, Agnes Lydia,	*Wausau.*

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SOPHOMORE CLASS.

Adams, Elsie Louise,	*Dunbar.*
Aldrich, Loyal Blaine,	*Milwaukee.*
Allen, Marion Bradburn,	*Cambridge.*
Amott, Albert Louis,	*Viroqua.*
Anderson, Esther,	*Madison.*
Anderson, William Alfred,	*Madison.*
Angell, Nellie Nadine,	*Sun Prairie.*
Armstrong, Vermillion,	*Madison.*
Barker, Blanche Jessie,	*Ipswich, S. Dak.*
Bednarek, Joseph Leon,	*Beaver Dam.*
Bellack, Mabel Janette,	*Milwaukee.*
Besley, Harold Joslyn,	*Waukegan, Ill.*
Bewick, William Medhurst,	*Madison.*
Blackburn, Carolyn Etta,	*Madison.*
Blied, Matilda Elizabeth,	*Madison.*
Bowen, Rose Andrews,	*Greenwood.*
Boyd, Thomas Logan,	*Chicago.*
Brady, Daniel Leo,	*Mt. Hope.*
Bray, Margaret Hazel,	*Oshkosh.*
Breidenbach, Otto Henry,	*Milwaukee.*
Breitenfeld, Ella Meta,	*Madison.*
Brewster, Harriet Jane,	*Madison.*
Brockway, Lulu Belle,	*Madison.*
Bushnell, Alfred Hanson,	*Lancaster.*
Byrne, Mary Frances,	*Madison.*
Carey, Alice Matilda,	*Madison.*
Carey, Loretto Helen,	*Sioux City, Ia.*
Cary, Walter Engene,	*Denver, Colo.*
Cavanagh, Richard Parkinson,	*Kenosha.*
Clark, Charles Rollin,	*Carthage, Ill.*
Clark, Floyd Milton,	*Madison.*
Clark, Tilden Ballard,	*Appleton.*
Clough, Ethel Pearl,	*Portage.*
Cogswell, Caroline Duston,	*Madison.*
Collmann, Chester William,	*Madison.*
Comstock, Verna Victorine,	*Milwaukee.*
Cook, Charles Alva Henry,	*Milton Junction.*
Cooper, Belva Naomi,	*Rochester.*
Corstvet, Anna Alice,	*Deerfield.*

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Dahl, Elnora,	*Westby.*
Daniells, William Nathaniel,	*Madison.*
Davis, Benjamin Franklin,	*Madison.*
Davison, Grace Wilhelmina,	*Spokane, Wash.*
Dorschel, Hugo,	*Chilton.*
Douglass, Anna,	*Postville, Ia.*
Douglas, Ella May,	*Winona, Minn.*
Douglass, Ruth,	*Postville, Ia.*
Dow, Bernice,	*Madison.*
Drips, Della Gay,	*La Crosse.*
Dunn, May Vanancia,	*Madison.*
Eder, Joseph,	*Milwaukee.*
Edwards, Alma,	*Kansasville.*
Ekern, Ruth Nathalie,	*Madison.*
Ellefson, Clarence Ferdinand,	*Madison.*
Ellefson, Elmer,	*Madison.*
Ellefson, Mabel Selma,	*Madison.*
Elliott, Laura Belle,	*Eau Claire.*
Esch, Fred Henry,	*Manitowoc.*
Eustice, Olle Jane,	*Livingston.*
Evjue, William Theodore,	*Merrill.*
Eyman, Elmer Vail,	*Evanston, Ill.*
Fay, Helen Armine,	*Madison.*
Field, Abiathar William,	*Baltimore, Md.*
Fields, Teresa Marguerite,	*Fargo, N. Dak.*
Fjoslien, Sigrid,	*Clinton.*
Flett, Elizabeth Townsend,	*Racine.*
Fox, Bessie Gordon,	*Madison.*
Frankenburger, Margaret,	*Madison.*
Frost, Raymond Southgate,	*Rockford, Ill.*
Fulton, Philip Randall,	*Hudson.*
Garner, Homer Clifford,	*Richland Center.*
Gaynor, Elizabeth Prudence,	*Grand Rapids.*
Gilfillan, Ella Barbara,	*West Salem.*
Gillard, Eugene Elsworth,	*East Troy.*
Gilman, Helen Leonard,	*Madison.*
Goe, Ruth,	*Madison.*
Goldschmidt, Hulda Hanchen,	*Earlville, Ill.*
Gourlie, Grace Bisbee,	*Oconomowoc.*
Gray, Harry Leon,	*Mazomanie.*

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Green, Abby Margaret,	*Minot, N. Dak.*
Grey, Ernest George,	*Milwaukee.*
Grove, Helen Theodore,	*Madison.*
Grow, Grace Lillian,	*Neillsville.*
Gugler, Ralph George,	*Milwaukee.*
Hacker, Emil Frederick,	*Arcadia.*
Hall, Lucy,	*Watertown.*
Hammersmith, Paul Walter,	*Milwaukee.*
Harker, Elva,	*Dodgeville.*
Harper, Hugh Allen,	*Madison.*
Harris, Helen Louise,	*Racine.*
Hastings, Bessie Edna,	*Oregon, Ill.*
Hatton, Arthur Wilson,	*Peru, Ill.*
Hayden, Pearl Catherine,	*Sun Prairie.*
Haynes, Nina Rose,	*Chicago, Ill.*
Head, Helen Louise,	*Albion.*
Hinkley, Cora Case,	*Milwaukee.*
Hinrichs, Charles Otto,	*Milwaukee.*
Hints, William,	*Cheyenne.*
Hitchcock, Raymond Royce,	*Lake Mills.*
Hobbins, Fanny,	*Madison.*
Hobbins, Grace,	*Madison.*
Hoffmann, Edward Wakefield,	*Milwaukee.*
Holum, Ruth Caroline,	*De Forest.*
Hopkins, Mabel Ruth,	*Rockford, Ill.*
Hoyt, James Mitchell,	*Evanston, Ill.*
Hurd, Margaret,	*Chippewa Falls.*
Inbusch, Charles Edwards,	*Milwaukee.*
Ives, George,	*Ft. Atkinson.*
Janecky, Adolph Rudolph,	*Racine.*
Janssen, Walter Arion,	*Davenport, Ia.*
Jedney, Eli Severn,	*Blair.*
Johnson, Isabel Reid,	*Portage.*
Jones, Edwin Converse,	*Portage.*
Kaiser, Carl William,	*Marshall.*
Keator, Clark Leffingwell,	*Moline, Ill.*
Keller, Irmagarde,	*Janesville.*
Ketchum, Edith Irene,	*Madison.*
Kiesel, Karl Henry,	*Madison.*
Kimball, Norman Captive,	*Kenosha.*

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Koenig, Robert Franklin,	*Freeport, Ill.*
Kostalek, John Anton,	*Milwaukee.*
Krape, William Gorman,	*Freeport, Ill.*
Krey, August Charles,	*Milwaukee.*
Kuntz, William Henry,	*Poynette.*
Lambeck, Arthur Hugo,	*Milwaukee.*
Larson, Alfred,	*Wausau.*
Larson, Lewis P.,	*Whitehall.*
Latta, Grace Deborah,	*Antigo.*
Lea, Mabel Emma,	*Clinton, Ia.*
Leslie, Donald Eugene,	*Clinton, Ia.*
Lloyd, Hubert Evan,	*Cambria.*
Loft, Genivera Edmunds,	*Greenwood.*
Lundberg, Emma Octavia,	*Rockford, Ill.*
Maas, Helen Bertha,	*Milwaukee.*
Mabbett, George,	*Milwaukee.*
Mabbett, Jessie Margaret,	*Edgerton.*
Mace, Florence Isabel,	*Duluth, Minn.*
Madson, Charles Andrew,	*Racine.*
Marsh, Helen,	*Neillsville.*
Marshall, Roy R.,	*East Troy.*
Maurer, Erma Edna,	*Arcadia.*
McClernan, Thomas Joseph,	*Madison.*
McGilvra, Ethel Rose,	*Baraboo.*
McKey, Elizabeth Douglas,	*Janesville.*
McNutt, Merna Theile,	*Portage.*
Mead, Arlisle Maria,	*Plymouth.*
Melcher, Alice Frances,	*Hinsdale, Ill.*
Menzies, Charles Stuart,	*Janesville.*
Menzies, Isabel Mac Gregor,	*Janesville.*
Miller, Florence Mosher,	*Rhinelander.*
Milward, Daisy,	*Madison.*
Minn, Elsie Marcellite,	*Milwaukee.*
Moll, Dorothea Alvyna,	*Madison.*
Morse, Byrrd Pearl,	*Madison.*
Moser, Hildred Daisy,	*Madison.*
Mueller, Erma Voshardt,	*Two Rivers.*
Munson, Helen Alice,	*Viroqua.*
Nelson, Oliver Otto,	*Madison.*
Newman, Celia Elizabeth,	*Madison.*
Noyes, Miriam,	*Oshkosh.*

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O'Hara, Donald Mc Millan,	*Oshkosh.*
O'Keefe, Mary Calista,	*Portage.*
Olin, Mary Estelle,	*Belleville.*
Oliver, Edward James,	*Hudson.*
Orvis, Mary Burchard,	*Madison.*
Owen, Mary Elizabeth Hodges,	*Whitewater.*
Parker, Amy,	*Fennimore.*
Parker, Harry Fletcher,	*Hudson.*
Parsons, Caryl,	*Madison.*
Patterson, Mark Lawrence,	*Baraboo.*
Pelton, Edith Lovina,	*Burlington.*
Pengra, Stella May,	*Madison.*
Perry, Clayton Shields,	*Rice Lake.*
Petrie, Rollie Al,	*Mauston.*
Pettigrew, Bessie,	*Sioux Falls, S. Dak.*
Pfafflin, Frieda Louise,	*Indianapolis, Ind.*
Pitkin, Frances Claire,	*Chicago, Ill.*
Pomeroy, Alice,	*Holton, Kansas.*
Proud, Mary,	*Madison.*
Quarles, Charles Bullen,	*Milwaukee.*
Rabe, Albert Henry,	*Neenah.*
Read, James Burton,	*Lake Geneva.*
Rehfeld, Minnie Elmida,	*Horicon.*
Reinking, Olga Elizabeth,	*Baraboo.*
Richards, Jesse Lawrence,	*Madison.*
Roach, Rollin Edwin,	*Rock Rapids, Ia.*
Roberts, Margery,	*Milwaukee.*
Roberts, Eck Crippen,	*Madison.*
Robinson, Earl Jay,	*Fort Dodge, Ia.*
Rosenheimer, Newton William,	*Kewaskum.*
Rosholt, Emma Josiphine,	*Oconomowoc.*
Rowe, Mae Edith,	*Plymouth.*
Sanborn, George Allen,	*Madison.*
Sanborn, Eugene Hiram,	*Madison.*
Saundeson, Katharine Moore,	*Madison.*
Schaus, Peter Irving,	*Milwaukee.*
Schneider, Francis Lee,	*West Salem.*
Schnell, Lottie Irene,	*Madison.*
Schrank, Valentine Edward,	*Milwaukee.*
Schroeder, Arthur Joseph,	*Racine.*

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Schubring, Selma Langenhan,	*Madison.*
Scott, Genevieve Allen,	*Lake Geneva.*
Scott, Jeannette Marie,	*Hudson.*
Secrist, Horace,	*Madison.*
Seeger, Paul August,	*Milton Junction.*
Seiler, Alexander Walter,	*Madison.*
Seilstad, Edna Theodora,	*La Crosse.*
Sensui, Yasu,	*Tokyo, Japan.*
Severin, Henry Harry,	*Milwaukee.*
Shaw, Emma Hart,	*Madison.*
Siebecker, Karl La Follette,	*Madison.*
Smalley, Alice,	*Madison.*
Smith, Diana Jean,	*Mondovi.*
Smith, Eleanor Clemons,	*Madison.*
Sprague, William Harvey,	*Elkhorn.*
Stark, Paul Edwin,	*Madison.*
Starke, Meta Eleanore,	*Milwaukee.*
Starks, Estella Marie,	*Madison.*
Steig, Josie,	*Whitehall.*
Stevens, Lester Barber,	*Milwaukee.*
Stoeber, Mary Margaret,	*Madison.*
Stotzer, Oscar Frederick,	*Portage.*
Strawn, Walter Ne Voy,	*Ottawa, Ill.*
Stromme, Olaf Ulring,	*Madison.*
St. Sure, Jeannette Lucile,	*Madison.*
Sullivan, Arthur George,	*Eau Claire.*
Sunderland, Adolph D.,	*Kilbourn.*
Suttle, Bessie,	*Lancaster.*
Swenson, Alice Mann,	*Madison.*
Swenson, Edith Dinsdale,	*Madison.*
Swenson, Edna Grace,	*Madison.*
Swenson, Henry Edward,	*Racine.*
Swint, Katherine Marie,	*Madison.*
Teisberg, Halvor Orlando,	*Cottage Grove.*
Thompson, Grace,	*Washington, D. C*
Thompson, Tilde Tomina,	*Deerfield.*
Tragsdorf, Clara Christine,	*Neillsville.*
Underwood, Bessie Caroline,	*Madison.*
Underwood, Walter Scott,	*Milwaukee.*
Usher, Florence Lou,	*Madison.*
Vater, Alma,	*Madison.*

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Walechka, John Harvard,	*Clintonville.*
Walker, Alice Mary,	*St. Croix Falls.*
Walker, Louise Estelle,	*Madison.*
Waller, Frank Laird,	*Menomonie, Wis.*
Wallis, Elvira Frances,	*Milwaukee.*
Wehmhoff, Frieda Gertrude,	*Burlington.*
Whelan, Judson Sutherland,	*Mondovi.*
Whelan, Letta Helen,	*Madison.*
White, Charlotte Eleanor,	*Madison.*
Wiggenhorn, Ralph Guido,	*Watertown.*
Williams, Frankwood Earl,	*Indianapolis, Ind.*
Willis, May Henrietta,	*Winona, Minn.*
Woffenden, Adah Annastasia,	*Madison.*
Wolfe, Hubert Otto, Jr.,	*Appleton.*
Wright, Colin Wilson, Jr.,	*Monroe.*
Wright, Marion Elizabeth,	*Baraboo.*
Young, Will,	*Elkhorn.*

Course in Commerce.

Atwood, Seth Burton,	*Rockford, Ill.*
Averill, George Baxter, Jr.,	*Whitewater.*
Bovet, Charles Edward,	*Buenos Aires, Argentine Rep.*
Brewster, Eugene Moyer,	*Madison.*
Brinkman, Carlyle K.,	*Superior.*
Burgy, Herman William,	*Monroe.*
Burke, Tracy Lloyd,	*La Crosse.*
Bush, Charles Oscar,	*Viroqua.*
Carpenter, Arthur Espenette,	*Windsor.*
Chase, Joseph Benjamin,	*Sun Prairie.*
Coe, Jerome Henry,	*Barron.*
Coyner, Dunkle Ralph,	*Rockford, Ill.*
Curtin, Joseph Henry,	*Madison.*
Dahmen, Frederick William,	*Cross Plains.*
Davis, Ellis Arthur,	*Madison.*
Dorward, Glen Giles,	*Onawa, Ia.*
Droege, Henry August,	*Eau Claire.*
Edge, William Cleveland,	*Fennimore.*
Hill, Rowland,	*Kansas City, Mo.*
Horrigan, John Frank,	*Sioux City, Ia.*
Howitt, Harvey Mathew,	*Pewaukee.*

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Huhn, Oscar Ferdinand,	*Cleveland.*
Hurning, Harry H.,	*Madison.*
Jones, Frank Conn,	*Hebron, Ill.*
Kessenich, Frank, Jr.,	*Madison.*
Larson, Rollin J.,	*Galva, Ill.*
Lea, Robert Wentworth,	*Iron River.*
Leslie, John Woodworth,	*Chicago, Ill.*
Lewis, Lawrence Brownell,	*Clarinda, Ia.*
Logan, William Arthur,	*Madison.*
McLean, Francis Julian,	*Menomonie.*
McNally, Walter Henry,	*Cedar Falls, Ia.*
Montgomery, Harry Gage,	*Omaha, Neb.*
Morgan, William John,	*Valders.*
Mueller, Paul Gehard,	*Chicago, Ill.*
Nelson, Charles Lawrence,	*Sturgeon Bay.*
Nevius, Blake Reynolds,	*Winona, Minn.*
Niven, Robert Marcus,	*Sheridan.*
Nolan, Henry Thomas,	*Madison.*
O'Melia, James Henry,	*Rhinelander.*
Postlewait, Orvis Allen,	*Oak Park, Ill.*
Pryor, Earl,	*La Crosse.*
Reynolds, Paul Naugle,	*Jacksonport.*
Riley, Edmund Burke,	*Chippewa Falls.*
Robbins, Frank Thomas,	*La Crosse.*
Roberts, Chester Burleigh,	*Milwaukee.*
Schnetzky, Hugo Walter,	*Milwaukee.*
Schroer, Oscar Charles,	*Plymouth.*
Schuster, Addison Brown,	*Rockford, Ill.*
Sommers, Alfred Louis,	*Sheboygan.*
Stark, Herbert Carl,	*Milwaukee.*
Stone, James Riley,	*Reedsburg.*
Tarr, Charles Albert,	*New Auburn.*
Uehling, Alexander Theodore,	*Watertown.*
Volkmann, William Arnold,	*Kingston.*
Walbridge, John Solon, Jr.,	*Berlin.*
Webb, De Lancey Starkweather,	*Superior.*
Week, Harold J.,	*Stevens Point.*
Woodward, Lysander Milton,	*Reedsburg.*
Wrieth, John,	*Two Rivers.*

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FRESHMAN CLASS.

Adams, Ruth Audrey,	*Sheboygan.*
Allen, Ruth Alice,	*Lake Geneva.*
Anderson, Cornelia,	*Milwaukee.*
Armstrong, Susan Naylor,	*Madison.*
Augspurger, Louis Fred,	*Sheboygan.*
Barker, Ernest Franklin,	*Superior.*
Barnes, Rufus Alexander,	*Elkhorn.*
Barrett, Lucia Townsend,	*Cincinnati, Ohio.*
Barry, Mary Regina,	*Oregon.*
Baumeister, Theodore Anton,	*Kewaunee.*
Beardsley, Alta Maie,	*Madison.*
Beers, Raymond Chester,	*Honey Creek.*
Benson, Guy Alfred,	*Iola.*
Benton, Homer Harrington,	*Richland Center.*
Bertles, Alma,	*Green Bay.*
Besley, Harold Joslyn,	*Waukegan, Ill.*
Bishop, Burnett Orvilla,	*Racine.*
Bitter, Elsa Anna,	*Sheboygan.*
Black, Oscar Mc Donald,	*Richland Center.*
Blackburn, Anna,	*Madison.*
Blankenagle, John Charles,	*Hartford.*
Blatz, Gustave Grover,	*Milwaukee.*
Blum, Herman,	*Eau Claire.*
Bollenbeck, William Joseph,	*Madison.*
Borresen, Alice Julia,	*La Crosse.*
Breitkreutz, Adeline Albertine,	*Wausau.*
Bresee, Emily May,	*Madison.*
Bright, Julia May,	*Black River Falls.*
Brindley, Elbert Edwin,	*Richland Center.*
Brose, William Michael,	*Racine.*
Brown, Althea Huntington,	*Madison.*
Brown, Florence Mary,	*Spring Green.*
Brown, Harry Willard,	*Columbus.*
Brown, John Townsend,	*Berlin.*
Brown, Robert Carlton,	*Madison.*
Browne, Gerry Edward,	*Rhinelander.*
Burnson, Gustav Norman,	*Sun Prairie.*
Caine, Mary Ethel,	*Milwaukee.*
Canan, Cuba Quincy,	*La Crosse.*
Carpenter, Mae Louise,	*Fond du Lac.*

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Carter, Bessie Ann,	*Lancaster.*
Casey, Edwina Mary,	*Mt. Horeb.*
Charles, Maude Mueller,	*Madison.*
Cheney, Charles Albert, Jr.,	*Madison.*
Chritzman, Elizabeth Ziegler,	*Kewanee, Ill.*
Churchill, Charlotte Amelia,	*Monroe.*
Churchill, Ethel Elizabeth,	*Monroe.*
Chynoweth, Emily Ellen,	*Madison.*
Cleveland, Edith,	*Fond du Lac.*
Coleman, Bessie Rachael,	*Madison.*
Coleman, Mary Kathryn,	*Madison.*
Colingmon, John Joseph,	*Sturgeon Bay.*
Comstock, Florence,	*Milwaukee.*
Conger, Herbert Louis,	*Milwaukee.*
Conard, Grace Dodge,	*Oak Park, Ill.*
Conlan, Lawrence Neil,	*Milwaukee.*
Cornell, George Marshall,	*Sheboygan.*
Cox, Eldonne Frederick,	*Milwaukee.*
Crocker, Blanche Grayce,	*Neillsville.*
Crosby, Emily Maud,	*Lake Mills.*
Crounse, Frances Hilton,	*Oak Park, Ill.*
Cudahy, Michael Francis,	*Milwaukee.*
Cunningham, Arthur James,	*Beloit.*
Curkeet, William Robert,	*Darlington.*
Curtis, Martha Elizabeth,	*Madison.*
Cutler, Louise Carlton,	*Eau Claire.*
Darragh, Ellis Albert,	*Marinette.*
Davenport, Audrey Amazon,	*Madison.*
Denniston, Helene,	*Hudson.*
Denu, Autie,	*Madison.*
De Sautelle, William Thomas,	*La Crosse.*
Diemer, Melvin Edison,	*Dakota, Ill.*
Dillon, Leula Elsie,	*Madison.*
Dinsdale, Alvina Nellie,	*Madison.*
Dodge, Anna Edith,	*Windsor.*
Dohmen, Fred Wentworth,	*Milwaukee.*
Dorothy, Julia Mabel,	*St. Croix Falls.*
Doyle, Helena Irene,	*East Troy.*
Driver, Hazel,	*Chicago.*
Duckert, Richard Frederick,	*Cottage Grove.*
Durkee, Majorie,	*Lake Geneva.*

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Eastman, Mirian Elizabeth,	*Plymouth.*
Ellestad, John Martin,	*Madison.*
Elliott, Cosalette,	*Madison.*
Enright, Frances Catherine,	*Troy Center.*
Evans, Alice,	*Madison.*
Evans, Gertrude Catherine,	*Madison.*
Evenson, Mildred Ernestine,	*Sparta.*
Faucett, Frances,	*Laurium, Mich.*
Fehlandt, Olive Marie,	*Madison.*
Filbey, Estella,	*Oakfield.*
Fischer, August Charles,	*Waukegan, Ill.*
Fischer, Marie Fredericka,	*Prairie du Sac.*
Flint, Helen,	*Madison.*
Floete, Franklin Grotewohl,	*Armour, S. Dak.*
Fox, Cornelia Lillian,	*Madison.*
Francisco, Louis Joseph,	*Richmond, Ind.*
Frederickson, Marion Emma,	*Madison.*
French, Charles William,	*Lake Geneva.*
Frost, Attollee Rosaille,	*Evansville.*
Frost, Raymond Baker,	*Almond.*
Gangstad, Ida Marie,	*Deerfield.*
Gates, Ira Griffin,	*Fox Lake.*
Gay, Delgracia Barbara,	*Madison.*
Gay, Mary Elizabeth,	*Madison.*
Gilkey, Mary Elma,	*Oshkosh.*
Gloyer, Walter Oscar,	*Milwaukee.*
Goldschmidt, William Jacob,	*Milwaukee.*
Gordon, Nellie Elsie,	*Waupaca.*
Green, Ethel Blanche,	*Middleton.*
Greene, Florence Watson,	*Minot, N Dak.*
Greverus, Jenos,	*Appleton.*
Gronert, Theodore,	*Prairie du Chien.*
Gruhl, Edwin Frederick,	*Milwaukee.*
Gutsch, Milton Adolph,	*Sheboygan.*
Hall, May Prudence,	*Madison.*
Hambrecht, Elizabeth Lois,	*Middleton.*
Hannan, William Frawley,	*Milwaukee.*
Harding, Harriet Agnes,	*Chicago.*
Harvey, Harold Vincent,	*Racine.*
Hayes, Catherine Elizabeth,	*La Crosse.*
Heinz, Adolph,	*Madison.*

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Henoch, Merle,	*La Porte, Ind.*
Hilderbrand, Ruby Zaidee,	*Milwaukee.*
Holmes, Edna Dorothea,	*Milwaukee.*
Hood, Thurman Los,	*La Crosse.*
Hopson, Amy Jane,	*Madison.*
Horan, Lenore Margaret,	*Eau Claire.*
Horn, Walter Theodore,	*Belleville, Ill.*
Hunter, Helen Katharine,	*Racine.*
Hutson, Harriet Mae,	*Madison.*
Ihland, Ole Leonard,	*De Forest.*
Jackson, Charles Proctor,	*De Pere.*
Jamieson, Laura Belle,	*Poynette.*
Jenkins, Deborah May,	*Elroy.*
Jennings, Ruth Leland,	*Madison.*
Joeckel, Carleton Burns,	*Lake Mills.*
Johnson, Ella Christiana,	*Joliet, Ill.*
Johnson, Helen Mc Carthy,	*Aurora, Ill.*
Johnson, Jean Muriel,	*Hudson.*
Johnson, J. Cornelius,	*Madison.*
Jones, Ethel M.,	*Dodgeville.*
Jones, John D., Jr.,	*Racine.*
Joslin, Elizabeth Verran,	*Madison.*
Kahl, Emma Jeanette,	*Madison.*
Karges, Frank Edward,	*Burlington.*
Karrow, Herman Henry,	*Milwaukee.*
Kasten, Marie Antoinette,	*Milwaukee.*
Kelley, John Cecil,	*Aurora, Ill.*
Kennedy, Francis Ambrose,	*Chilton.*
Kirby, Ethel Louisa,	*Milwaukee.*
Kirst, Ottilie Louise,	*Waunakee.*
Knüppel, Arnold Ewald,	*Appleton.*
Krzysko, Stanley Leon,	*Milwaukee.*
Leaper, Warren Eugene,	*Green Bay.*
Le Clerc, Genevieve Marguarite,	*Milwaukee.*
Le Febvre, Clarence Charles,	*Green Bay.*
Lehmann, Van V.,	*Neosha.*
Leiserson, William Morris,	*New York City.*
Lewellin, Bessie Eleanor,	*Waterloo.*
Longfield, Mary Fidelia,	*Madison.*
Loomis, Arthur Mayhew,	*Clinton.*
Lounsbury, Almyra Belle,	*Madison.*

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Lounsbury, Sylvia Elizabeth,	*Madison.*
Luckenbach, Walter Conrad,	*Oconto.*
Lueders, August Henry,	*Chicago.*
Lurvey, Homer David,	*Dousman.*
Mac Arthur, Isabelle,	*Superior.*
Mac Murtery, Katherine,	*Waupaca.*
Maiben, Frank Lucilius,	*Lancaster.*
Manning, Hazel,	*Madison.*
Manor, Emma Elizabeth,	*Baraboo.*
Marks, Mary Ella,	*Davenport, Ia.*
Martin, Anne Dodge,	*Darlington.*
Mathews, George Clyde,	*Burlington.*
McCarthy, Frank,	*Stoughton.*
McIntosh, Ida Louise,	*Lodi.*
McRae, Florence Edna,	*Rhinelander.*
Mercein, Charles Schley,	*Milwaukee.*
Meyer, Edward Valentine,	*Prairie du Sac.*
Meyer, William George,	*Jefferson.*
Mills, Jean,	*Madison.*
Moe, Josephine Margaretta,	*Pensaukee.*
Monshau, Carl Eslie,	*Evansville.*
Morell, Gertrude Ina,	*Milwaukee.*
Morrison, Ethel,	*Pawnee City, Neb.*
Morrison, Ralph Newton,	*Rockford, Ill.*
Morter, Robert John,	*Okee.*
Muenster, Ernst, Jr.,	*New Holstein.*
Mulaney, John Valentine,	*East Troy.*
Murchison, Hettie Marie,	*Kewaunee, Ill.*
Murphy, Nellie Christine,	*Evanston, Ill.*
Myres, Harold Bunce,	*Janesville.*
Nebel, Eugene William,	*Madison.*
Nebel, Norma Marie,	*Madison.*
Nebel, Walter,	*Madison.*
Nelson, Ferdinand Carl,	*Rockford, Ill.*
Neprud, Nora,	*Westby.*
Nethercut, Mary Bell,	*Lake Geneva.*
Oakey, Samuel Frederick,	*Osceola.*
Ottesen, Realff,	*Davenport, Ia.*
Paddock, Gladys,	*Prophetstown, Ill.*
Parmelee, Mary Reynale,	*Sheboygan.*

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Peshak, Josephine Angeline,	*Sun Prairie.*
Pilgrim, Mary Grace,	*Somerset.*
Pollock, Burne,	*Lancaster.*
Pope, Rosa Matilda,	*Racine.*
Pretsch, Ida Christine,	*Prairie du Sac.*
Putnam, May Margarette,	*Madison.*
Quinn, Bernice Ethel,	*Madison.*
Rademacher, Oscar,	*Chicago, Ill.*
Randolph, Charles Wellington,	*East Troy.*
Rankin, Edward Ira,	*Ft. Atkinson.*
Rasmussen, William James,	*Phillips.*
Rayne, Mary Elizabeth,	*Madison.*
Rice, Elva May,	*Sparta.*
Riordan, Benjamin Raphael,	*Plymouth.*
Robinson, Edgar Eugene,	*Oconomowoc.*
Rodi, Irma,	*Calumet, Mich.*
Roehl, Julius Otto,	*Milwaukee.*
Roethke, Rudolph Walter,	*Chilton.*
Roump, Alma Bertha,	*Milwaukee.*
Ruth, Una Gertrude,	*Keokuk.*
Ruth, Verl Alton,	*Keokuk.*
Rutte, Joseph Walter,	*Pella.*
Sabin, Ethel Ernestine,	*Geddes, S. Dak.*
Sawyer, Lilla Holt,	*Beaver Dam.*
Sayle, Flora Mary,	*Cleveland, Ohio.*
Schreiner, Hildur Betzy Helena,	*Westby.*
Schroder, Walter Carl,	*West Bend.*
Schwartz, Susie Luella,	*Troy Center.*
Segerstrom, Signa,	*Rhinelander.*
Selmer, John Jacob,	*Eau Claire.*
Severin, Harry Paul,	*Milwaukee.*
Sexton, Walter Gresham,	*Marshfield.*
Shaw, Aldyth Hungerford,	*Madison.*
Sheean, John Osbourn,	*Galena, Ill.*
Sheets, Geneva Frances,	*Madison.*
Sheets, George Marsh,	*Madison.*
Sherwin, Parker Fracier,	*Fergus Falls, Minn.*
Shiels, Lena,	*Madison.*
Sieb, Zettie,	*Racine.*
Silverthorn, George Plumer,	*Wausau.*
Simon, Florence Anne,	*La Crosse.*

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Skinner, John Sharpe,	*Princeton, Ill.*
Smith, Charles Forster,	*Madison.*
Sobel, Edwin,	*Manitowoc.*
Spence, Mary Leslie,	*Lodi.*
Stair, Theodore Preston,	*Lake Mills.*
Staley, Katherine Eleanor,	*Warren.*
Stark, Charles William, Jr.,	*Tiffany.*
Stark, Laura Sophia,	*Madison.*
Steele, Acel Robert,	*Stevens Point.*
Steenbock, Helen Christine,	*Madison.*
Steinfort, Elvira Bertha,	*Watertown.*
Stempfel, Theodore,	*Indianapolis, Ind.*
Stephenson, Roy,	*Sturgeon Bay.*
Stephenson, Willard L.,	*South Bend, Ind.*
Stoddard, Elizabeth Shute,	*Janesville.*
Stoelting, Hugo Herbert,	*Oconto.*
Sweet, Ada Pearl,	*Grangeville, Idaho.*
Theige, Karl Johannes,	*Westby.*
Thomas, Herbert J.,	*Dodgeville.*
Togstad, Anna Isabel,	*Madison.*
Tollefson, Arthur Ralph,	*West Salem.*
Townsend, Elizabeth Hasselle,	*Oconomowoc.*
Traill, Mona Susie,	*Austin, Ill.*
Upson, Lent Dayton,	*Rockford, Ill.*
Vanderboom, Edward John,	*Marinette.*
Van Hise, Mary Janet,	*Madison.*
Van Slyke, Ruth Corbett,	*Madison.*
Vick, Irene Bergita,	*Madison.*
Vreeland, Baxter Graff,	*Denver, Colo.*
Wallin, Jennie Belden,	*Prairie du Chien.*
Walmsley, Stephen Marston,	*Eau Claire.*
Walster, Harlow Leslie,	*Spring Green.*
Waterman, Marian Leah,	*Cumberland.*
Weber, Lynda Marguerite,	*New Holstein.*
Webster, Lawrence Benjamin,	*Granton.*
Wehausen, Edna Grace,	*Madison.*
Wentworth, Bessie Sylvia,	*Milwaukee.*
Wermuth, Julius,	*Madison.*
Wertz, Martha Robinson,	*Torreston.*
Whidden, Marian,	*Oak Park, Ill.*
White, Ethel Silvia,	*Deerfield.*

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Whitehead, Josephine Woodworth,	*Golden, Colo.*
Whitmore, Alva Daniel,	*Spring Prairie.*
Whitemore, Ruth Hanson,	*Milwaukee.*
Wightman, Mildred Isabelle,	*Elroy.*
Wilcox, Chester Hodge,	*Quincy, Ill.*
Williams, James Bennett,	*Racine.*
Williams, Robert Eversy,	*Milwaukee.*
Wolff, Herman William,	*Lake Mills.*
Wood, George Brill,	*Delavan.*
Wright, Horace Whetherill,	*Madison.*
Wright, Mary Louise,	*Madison.*
Wright, Murray Scott,	*Fergus Falls, Minn.*
Yutzy, Philena,	*Sioux City, Ia.*
Zeidlhack, Felix Stephen,	*Milwaukee.*

Course in Commerce.

Anderson, Alvin Douglas,	*North Crandon.*
Ashum, John Harper,	*Eau Claire.*
Attridge, Harvey Howard,	*Baraboo.*
Auer, Frank Cleveland,	*Eau Claire.*
Aupperle, Alonzo Ary,	*Lancaster.*
Bagley, Frederick Phillips,	*Riverside, Ill.*
Baley, Earl Francis,	*Wonewoc.*
Barr, Alan Robert,	*Lake Geneva.*
Boden, Alvin James,	*Lake Geneva.*
Brereton, Hugh Hulcatte,	*Lodi.*
Brown, Webster A.,	*Rhinelander.*
Carlyon, Roscoe Edward,	*Clear Lake, Ia.*
Cashel, Morris Joseph,	*Grafton, N. Dak.*
Collver, Clinton Irving,	*Clinton.*
Crossman, Roland Derry,	*Fall River.*
Davidson, William Ward,	*Chicago, Ill.*
Dick, Roy Ingles,	*Oregon.*
Eddy, Roy Thomas,	*Dubuque, Ia.*
Elwell, Fayette Herbert,	*McGregor, Ia.*
Farnese, Theodore Clarence,	*Madison.*
Fisher, Frank,	*Janesville.*
Fox, Elmore Baker,	*Madison.*
Frederickson, Edward,	*Spring Green.*
George, Raymond Henry,	*Monticello, Ia.*

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Gesell, Egbert George,	*Tomahawk.*
Grindley, Leander Llewellyn,	*Wauwatosa.*
Grobe, Edwin Henry,	*Menomonie.*
Hall, Clark Houghton,	*Red Oak, Ia.*
Hatch, Clifford Franklin,	*Zenda.*
Hefty, Thomas Rudolph,	*New Glarus.*
Heglund, John Caleb,	*St. Croix Falls.*
Hering, Hugo Henry,	*Rockford, Ill.*
Hickcox, Frank Thomas Clark,	*Spring Green.*
Hopkins, Claudius Marion,	*Fennimore.*
Hume, Wellington Wilson,	*Oconto.*
Huntley, Murray Brown,	*Elroy.*
Kelley, William,	*Woodman.*
Krauthoefer, Emory William,	*Milwaukee.*
Kypke, Pierre August,	*Lake Mills.*
Langdon, Arthur Messer,	*Rhinelander.*
Leedom, Hampton,	*Milwaukee.*
Luder, Arthur Frank,	*Baraboo.*
Luedke, August John,	*Milwaukee.*
Mac Lanahan, Raymond Clark,	*McGregor, Ia.*
Malone, Edward Samuel,	*Rhinelander.*
Mariotte, Charles Maurice,	*Elroy.*
Marriott, William Theodore,	*Baraboo.*
Mason, Waldo Ralph,	*Boston, Mass.*
McClelland, Guy William,	*Berlin.*
McGovern, Fred Peter,	*Florence.*
McPartlin, Leslie John,	*Oshkosh.*
Merrill, Paul Ellis,	*Indianapolis, Ind.*
Metzner, Lee Weilep,	*Kewaunee.*
Meves, Walter Henry,	*Sheboygan.*
Meyer, Herman Fred,	*Cleveland.*
Michaels, Alfred Leslie,	*Berlin.*
Miller, Charles John,	*La Crosse.*
Miller, Frank August,	*Lake Geneva.*
Myers, Percy Harold,	*Wauwatosa.*
Naber, Frederick Bernard,	*Shawano.*
Nelson, Leonard Palmer,	*Port Arthur, Tex.*
Ogden, Elliot Mathews,	*Milwaukee.*
Orr, Robert Breckenridge,	*St. Joseph, Mo.*
Peck, Calvin Huntley,	*Racine Junction.*
Phelps, Samuel Henry,	*Minto, N. Dak.*

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Phillips, Milton Clarence,	*Oshkosh.*
Proctor, Lloyd Richard,	*Arcadia.*
Rawlings, William Edward,	*Eau Claire.*
Rehm, Walter Arthur,	*Chicago, Ill.*
Reuther, Jacob,	*Sheboygan.*
Rice, Felix,	*Milwaukee.*
Rightor, Chester Edward,	*Rockford, Ill.*
Roehr, Roland Blackstone,	*Milwaukee.*
Rogers, Ralph Webster,	*Spokane, Wash.*
Roseth, Leonard Edward,	*Eau Claire.*
Sanborn, Raymond Parker,	*Portage.*
Scheldrup, Robert Isaac,	*Frederic.*
Schiess, Roy Edward,	*Chicago.*
Slade, Mott Thomas,	*Slade's Corners.*
Sletten, Obert,	*La Crosse.*
Smith, Carl August,	*Rockford, Ill.*
Smith, Osmer Elliott,	*Waukesha.*
Soukup, Rudolph,	*Sturgeon Bay.*
Stroud, Ray Morris,	*Portage.*
Sylvester, Edwin Stull,	*Milwaukee.*
Talbot, Roy Maxwell,	*De Kalb, Ill.*
Tani, Hidezo,	*Sapparo, Japan.*
Tarbox, Charles William,	*La Crosse.*
Terry, Joe Wayne,	*Crandon.*
Thiermann, Max Lewis,	*Thiersville.*
Wallace, Eugene Edward,	*Galena, Ill.*
Walvoord, Anthony,	*Sheboygan.*
Webster, Fred Norton,	*Chicago, Ill.*

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SPECIAL STUDENTS.

Baker, Joseph Henry,	*Madison.*
Buck, Roy Warren,	*Berlin.*
Calkins, Frank Waldo,	*Stevens Point.*
Cole, Minnie Bruins,	*Madison.*
Dixon, Sara,	*Waukesha.*
Du Mez, Andrew Grover,	*Cashton.*
Dyrud, Tillie,	*Baraboo.*
Elmer, Edna,	*Milwaukee.*
Etter, Martha Inez,	*Monroe.*
Fields, James Stuart,	*Madison.*

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Foley, Geraldine Hyland,	*Wauwatosa.*
Gillett, Charles Mason,	*Superior.*
Higday, Hamilton Mathew,	*Evansville.*
Knoelk, Will Charles,	*Milwaukee.*
Maynard, Emma Hughes,	*Milwaukee.*
More, Agnes May,	*Avalon.*
Southwick, Margaret,	*Stevens Point.*
Stevens, Jessie Mary,	*Manitowoc.*
Tuttle, Mamie Eliza,	*Richland Center.*

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ADULT SPECIAL STUDENTS.

Abbott, Clarice Belle,	*Madison.*
Allen, Gazelle Burgess,	*Madison.*
Ayer, Owen,	*Unity.*
Ballu, Celine Agnes,	*Madison.*
Bartelt, George,	*New Fane.*
Beath, Orville Andrew,	*Verona.*
Benkendorf, Gustavus Henry,	*Madison.*
Bennett, William James,	*Virdue, Man.*
Berto, Elmer Charles,	*Madison.*
Berto, Thomas J.,	*Amherst.*
Blackwelder, Jean B.,	*Madison.*
Brabant, Edmund Joseph,	*Madison.*
Bruins, Jennie Marion,	*Brandon.*
Broughton, Ray,	*Evansville.*
Cary, Myra Treat,	*Madison.*
Cody, John Charles,	*Spring Green.*
Collins, John,	*Hillsboro.*
Cushing, Percy Marks,	*Milwaukee.*
Davenport, Mabel Claire,	*Madison.*
Festerling, Edwin Garfield,	*Sheboygan.*
Garrett, William Minor,	*Madison.*
Gunderson, Adolphus Engene,	*Stoughton.*
Hatton, Harry Loomis,	*Madison.*
Hoan, Daniel Webster,	*Waukesha.*
Holty, Martin Nuell,	*Madison.*
Hoffman, Arthur,	*Brookfield.*
Hookstad, Carl,	*Harvard, Ill.*
Ingalls, Marion,	*Menomonie.*
Jackson, James Albert, Jr.,	*Madison.*

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Jones, Walter Bancroft,	*Madison.*
Lewis, Arthur John,	*Custer.*
Lewis, Thomas Edwin,	*Custer.*
Lyons, Nettie Regina,	*Madison.*
Marr, Wilfred Francis,	*Oconto Falls.*
Melby, Elizabeth,	*Merrilan.*
Mercer, Samuel Alfred Browne,	*Mazomanie.*
Meyer, Arthur John,	*Oakwood.*
Michelson, Ida Geneva,	*Mt. Horeb.*
Milhaupt, Hattie Gertrude,	*New Holstein.*
Morgan, John Jerimiah,	*Cascade.*
Munson, Matthias,	*Soldiers Grove.*
Pace, Siedler Nelson,	*Culpeper, Va.*
Parkinson, Myra,	*Madison.*
Reed, Mary Rachel,	*Ida Grove, Ia.*
Retelstorf, Caroline Dorothea,	*Menomonie.*
Richardson, Adrienne Marie,	*Chicago, Ill.*
Riley, Miles Charles,	*Milwaukee.*
Sauerberg, Otto Friedrich,	*Neillsville.*
Schnorr, William Fred,	*Council Bluffs, Ia.*
Stocking, Earle Daniel,	*Madison.*
Stoehr, Joseph,	*Lynxville.*
Titus, Florence Grace,	*Madison.*
Todd, Ethel Eleanore,	*Madison.*
Turner, John David,	*Barnard, Kan.*
Welch, Charles Gale,	*Waukesha.*
Wellman, Rose Charlton,	*Washington, D. C.*
Wilson, Mazie Agnes,	*Cherokee, Ia.*
Winslow, Clarinda Louisa,	*Madison.*
Witherbee, Exie Lillian,	*Hazel Green.*

ADULT SPECIAL STUDENTS, COURSE IN COMMERCE.

Carden, James Leo,	*Chicago, Ill.*
Curran, Henry, Jr.,	*Stevens Point.*
Durkee, Maurice Halfred,	*Lake Geneva.*
Hemala, Maximilian,	*Troppan, Austria.*
Kimberly, Henry Hewitt,	*Neenah.*
Hemala Maximilian,	*Indianapolis, Ind.*
Preston, Charles Herbert,	*Westfield.*
Schodren, John George,	*Milwaukee.*
Talavera, Prisciliano,	*Chihuahua, Mex.*

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Course in Pharmacy.

FOUR YEAR COURSE.

Hartwig, Douglas Ferdinand,	*Watertown*,	First year.
Holden, Isabell Augusta,	*Madison*,	Senior.
Jahrling, Valerio y Cala,	*Manila, P. I.*,	First year.
Rabak, Frank,	*Madison*,	Senior.
Schulz, Raymond Louis,	*Milwaukee*,	First year.
Tweeden, Melvin Eugene,	*Oconomowoc*,	Senior.

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TWO YEAR COURSE.

Abbott, Harry Scott,	*Madison*,	First year.
Armstrong, Henry Clay,	*Ashland*,	First year.
Barker, Frank, Jr.,	*Rochelle, Ill.*,	First year.
Boyce, Milledge Arthur,	*Greenwood*,	Second year.
Davis, Benjamin Chester,	*Madison*,	Second year.
Davis, Henry,	*Madison*,	First year.
Dustin, Leslie Bertrand,	*Peoria, Ill.*,	First year.
Garvey, William Aloysius,	*Seneca*,	First year.
Goetz, Walter Fred,	*Milwaukee*,	First year.
Graw, Paul,	*Cashton*,	First year.
Harvey, William A.,	*Seneca*,	First year.
*Hassall, George Anschutz,	*Superior*,	Third year.
Hess, Winfield Scott,	*Johnson Creek*,	Second year.
Koehler, Jake Walter,	*Stevens Point*,	Second year.
Lindsay, Stewart,	*Plymouth*,	Second year.
*Longfield, Raymond Patrick,	*Madison*,	Third year.
Lueders, Ernest Richard,	*Columbus*,	Second year.
Melaas, Gaea Manda,	*Stoughton*,	First year.
Pasternacki, John George,	*Stevens Point*,	Second year.
Ramsey, George Harcout,	*Reedsburg*,	First year.
Rimsnider, Walter Henry,	*Madison*,	First year.
Sievers, Arthur Frederick,	*New Holstein*,	Second year.
*Sorley, Stanley Manleus,	*Weyauwega*,	First year.
Thenee, Henry Charles,	*Milwaukee*,	Second year.
Ward, Alvin Henry,	*Fond du Lac*,	First year.
Ziegelman, Edward Frank,	*La Crosse*,	Second year.

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*Taking three-year course.

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College of Engineering.

SENIOR CLASS.

Andrews, Aden Wright,	*Columbus,*	C. E.
Anger, Bernhard Fred,	*Milwaukee,*	M. E.
Baker, Vernon,	*Gaffney, S. C.,*	E. E.
Balch, Leland Rella,	*Neillsville,*	C. E.
Bennett, William Bryant,	*Madison,*	C. E.
Berg, John,	*Madison,*	C. E.
Biegler, Philip Sheridan,	*Chicago, Ill.,*	E. E.
Bolles, Edgar James,	*Madison,*	E. E.
Boone, Charles,	*Warren, Ill.,*	E. E.
Borchert, Ernst, Jr.,	*Milwaukee,*	G. E.
Boynton, John Edson,	*Jerseyville, Ill.*	M. E.
Blaine, Joseph Robert Smith,	*Milwaukee,*	M. E.
Blossey, Albert Frederick,	*Cadott,*	M. E.
Brennan, Bernard Conrad,	*Cato,*	C. E.
Brenton, Charles Elmer,	*Madison,*	E. E.
Brown, William Edwin,	*Racine,*	C. E.
Bull, Eyvind Hagerup,	*Madison,*	G. E.
Burke, Thomas James,	*Winona,*	C. E.
Burling, Lancaster Demorest,	*Madison,*	G. E.
Burnett, Earle Smead,	*Madison,*	M. E.
Casserly, James Felix,	*Madison,*	E. E.
Conrad, Nicholas John,	*Port Washington,*	E. E.
Coon, Royden Jonas,	*Plainfield,*	G. E.
Craigo, Ralph Thurman,	*Monroe,*	G. E.
Cronk, Forbes Bismarck,	*Madison,*	C. E.
Derge, Matthias Louis,	*Eau Claire,*	E. E.
Dorner, Frederick Harry,	*Milwaukee,*	M. E.
Duckelt, Walter Elmer,	*Burlington,*	C. E.
Elmore, Samuel Eltinge,	*Milwaukee,*	M. E.
Eustis, Charles Lerom,	*Shell Lake,*	E. E.
Ewald, Robert Franklin,	*Madison,*	C. E.
Falconer, Donald Patton,	*Madison,*	C. E.
Gardner, Harry,	*Monroe,*	G. E.
Gates, Howard Babcock,	*Milton Junction,*	C. E.
Gierow, Otto Albert,	*Chilton,*	E. E.
Gold, Sol,	*Milwaukee,*	C. E.
Graham, Guy Alexander,	*Reedsburg,*	C. E.
Haley, George Henry,	*Watertown, N. Y.,*	C. E.

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Hankinson, Ray Lyton,	*Evansville,*	G. E.
Hansen, Charles Andrew,	*Racine,*	E. E.
Harlacher, Lloyd Ralph,	*Freeport, Ill.,*	C. E.
Harvey, William Riley,	*Madison,*	E. E.
Hatter, Clarence Peter,	*Chicago, Ill.,*	E. E.
Haugen, Charles Marius,	*Chicago, Ill.,*	E. E.
Hawley, Edward Joseph,	*Green Bay,*	G. E.
Heidemann, Walter Richard,	*Waterloo,*	E. E.
Hejda, Charles William,	*Manitowoc,*	E. E.
Helmholz, Arthur William,	*Madison,*	E. E.
Helzer, Arthur Edmund,	*Madison,*	E. E.
Hoefer, Chester Arthur,	*Freeport, Ill.,*	M. E.
Hoefer, Elmer George,	*Freeport, Ill.,*	M. E.
Hopper, Charles Van Emburg,	*Eau Claire,*	C. E.
Hosig, Irwin Benjamin,	*Hartford,*	C. E.
Hoyt, Ray Stevens,	*Madison,*	E. E.
Inbusch, Herbert Stark,	*Milwaukee,*	E. E.
Inbusch, Walter Henry,	*Milwaukee,*	E. E.
Irving, Thomas Joseph,	*Watertown,*	C. E.
Jacobs, Ernest R.,	*Aurora, Ill.,*	M. E.
Jones, Richard,	*Waukesha,*	E. E.
Jones, William Nelson,	*Madison,*	C. E.
Kayser, Edward Mathew,	*Green Bay,*	C. E.
King, Max Werner,	*Madison,*	C. E.
Klatte, Alfonzo Julius,	*Milwaukee,*	C. E.
Larsen, Albert,	*Milwaukee,*	M. E.
Larson, Clarence Melrose,	*Madison,*	C. E.
Lewy, Daniel,	*Chicago, Ill.,*	M. E.
Mann, Franklin Harvey,	*Shullsburg,*	C. E.
MacMillan, Harold St. Clair,	*Wauwatosa,*	M. E.
McMullen, Vincent E.,	*Dodgeville,*	E. E.
McWethy, Frank Henry,	*Aurora, Ill.,*	M. E.
Meyer, Adolph Frederick,	*Milwaukee,*	C. E.
Miller, Arthur Herbert,	*West Salem,*	M. E.
Moe, William Harold S. C.,	*Wauwatosa,*	M. E.
Moles, Edward Snetting,	*Madison,*	E. E.
Morgan, Walter Daniel,	*Reedsburg,*	G. E.
Morrisey, Patrick William,	*Mauston,*	M. E.
Muir, Roy Cummings,	*Arcadia,*	E. E.
Olson, Harry Marinius,	*Madison,*	E. E.
Orbert, Edwin Gray,	*Green Bay,*	C. E.

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Peotter, Reuben Sylvester,	*Appleton,*	C. E.
Perkins, Willis Drummond,	*La Crosse,*	E. E.
Peterson, Henry William,	*Waldo,*	C. E.
Potts, Frederick Andrew,	*Waupaca,*	C. E.
Price, John Rose,	*Cambria,*	E. E.
Ramstad, Albert George,	*Eau Claire,*	E. E.
Reed, Carl Sweetland,	*Canardaigua, N. Y.*	M. E.
Rice, Leverett Ernest,	*Madison,*	E. E.
Richardson, Walter Hawley,	*Milwaukee,*	M. E.
Robinson, Ray Fisk,	*Superior,*	E. E.
Rodenbaeck, George Albrecht,	*New Holstein,*	E. E.
Rogers, Paul Boleyn,	*Milwaukee,*	G. E.
Rood, Charles Mackey,	*Reedsburg,*	M. E.
Rowley, Frank Benjamin,	*Evansville,*	M. E.
Russell, Wilber Sands,	*La Crosse,*	M. E.
Sawyer, Walter Percy,	*Waukesha,*	G. E.
Schattschneider, Sylvester,	*De Forest,*	C. E.
Schmidley, William Robert,	*Janesville,*	E. E.
Schmidt, William Frederick,	*Manitowoc,*	E. E.
Seyton, Harry J.,	*Madison,*	C. E.
Sherron, Frank James,	*Monroe,*	G. E.
Sinz, Edward Frederick,	*Johnsonville,*	C. E.
Smith, John Raymond,	*Chicago, Ill.,*	M. E.
Smith, William Hooper,	*Baltimore, Md.,*	M. E.
Snow, William Mathew,	*Mineral Point,*	G. E.
Swan, George Dempster,	*Clinton,*	E. E.
Thon, George Louis,	*Aurora, Ill.,*	C. E.
Tubesing, William Fred,	*Milwaukee,*	C. E.
Turner, Paul Boynton,	*Stoughton,*	E. E.
Vinson, Albert Wilkinson,	*Milwaukee,*	M. E.
Wagner, Ray Taber,	*Dubuque, Ia.,*	E. E.
Walter, Roscoe George,	*Mazomanie,*	C. E.
Ward, Hugh Charles,	*Madison,*	E. E.
Weld, Harold Kenneth,	*Elgin, Ill.,*	G. E.
Wharry, Major Earl,	*Elkhorn,*	M. E.
Wheeler, William Sprague,	*Chicago, Ill.,*	M. E.
Whinery, Ralph Harper,	*Marshalltown, Ia.,*	C. E.
Whitcomb, Walter John,	*Monroe,*	C. E.
Whyman, Robert Horatio,	*Madison,*	M. E.
Willison, Charles Donald,	*Fennimore,*	E. E.
Wulfing, Harry Eugene,	*Madison,*	E. E.

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JUNIOR CLASS.

Arnold, Harry Earle,	*Lake Geneva,*	M. E.
Baily, Robert William,	*Des Moines, Ia.*	M. E.
Baldwin, William Gage,	*Sparta,*	M .E.
Balsom, Amos Parker,	*Hudson,*	E. E.
Balsom, John James,	*Hudson,*	E. E.
Barker, Harold Jean,	*Ipswich, S. Dak.,*	C. E.
Bartlett, Edwin Ball,	*Milwaukee,*	E. E.
Bates, William Ensign,	*Mason City, Ia.,*	C. E.
Bayne, Robert Royden,	*Warren, Ill.,*	M. E.
Bell, Walter Mortimore,	*Hudson,*	M. E.
Bertke, Wilson Arthur,	*Milwaukee,*	E. E.
Beye, Cudworth,	*Oak Park, Ill.,*	M. E.
Biersach, Rudolph,	*Milwaukee,*	M. E.
Bingham, James Baldwin,	*Madison,*	C. E.
Blackburn, Fred M.,	*Verona,*	E. E.
Bodenbach, Max Nicholas,	*Milwaukee,*	E. E.
Breitkreutz, Emil William,	*Wausau,*	C. E.
Brewer, Paul James,	*Mineral Point,*	E. E.
Brown, Edwin Stanton,	*Indianapolis, Ind.,*	C. E.
Burling, Beverly Burdette,	*Madison,*	E. E.
Bush, James Irving,	*Racine,*	M. E.
Byers, Vernon Clyde,	*Madison,*	E. E.
Cade, Orpheus Blaine,	*Viroqua,*	E. E.
Calvin, Carl J.,	*Lancaster,*	C. E.
Concklin, Bert Morse,	*Madison,*	G. E.
Conway, William Malcolm,	*Madison,*	G. E.
Curtin, James Hugh,	*Madison,*	C. E.
Davidson, Paul Edward,	*Green Bay,*	E. E.
Davis, Ralph Emerson,	*Des Moines, Ia.,*	G. E.
Delgado, Alan Edgar,	*Kingston, Jamaica,*	E. E.
Dunlap, Guy Lewis,	*Mazomanie,*	G. E.
Eskuche, Oscar Arthur,	*Milwaukee,*	M. E.
Falk, Harold Sands,	*Milwaukee,*	G. E.
Fisher, Frank Eugene,	*Joliet, Ill.,*	E. E.
Flagg, William Henry,	*New Lisbon,*	E. E.
Ford, Ralph Henry,	*Sparta,*	E. E.
Foster, Dean Edward,	*Preston, Ia.,*	M. E.
Gormly, John Henry,	*Ft. Atkinson,*	C. E.
Hardacker, Raymond James,	*Appleton,*	E. E.
Harrop, James Lawrence,	*Fond du Lac,*	C. E.

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Hart, Julian George,	*Gillingham,*	M. E.
Harza, Le Roy Francis,	*Brookings, S. Dak.,*	C. E.
Hess, George Bailey,	*Racine,*	M. E.
Hoefer, Alfred Ulyses,	*Freeport, Ill.,*	M. E.
Howson, Elmer Thomas,	*Madison,*	C. E.
Hull, Irving Weslie,	*Antigo,*	E. E.
Hunt, Henry James,	*Stoughton,*	C. E.
Hurley, John Dennis,	*New London,*	C. E.
Jacobson, Ernst,	*Clinton Junction,*	E. E.
Jenista, George John,	*Racine,*	E. E.
Johnson, Arden Richard,	*Stoughton,*	E. E.
Johnson, Frederick May,	*Tunnel City,*	C. E.
Johnson, Guy Maxwell,	*West Salem,*	M. E.
Kearney, Edgar,	*Springfield, Mo.,*	M. E.
Kelly, Thomas Francis,	*Milwaukee,*	E. E.
Kennedy, Frank Albert,	*Merrill,*	C. E.
Keyes, Dudley Hyde,	*Madison,*	E. E.
Kirk, Allen Taylor,	*Chicago, Ill.,*	M. E.
Kommers, Jesse Benjamin,	*Sheboygan,*	E. E.
Kowalk, Otto Louis,	*South Kaukauna,*	E. E.
Lacher, Walter Scott,	*Waukesha,*	C. E.
La Dow, Carl Vernon,	*Sandusky, Ohio,*	M. E.
Lawrence, Douglas Howard,	*Sterling, Ill.,*	G. E.
Lawrence, Francis Wolcott,	*Sheboygan,*	C. E.
Leasman, Emil Leo,	*Boscobel,*	M. E.
Legreid, Herman Nicholas,	*Stoughton,*	E. E.
Libby, Lawrence Moses,	*New Richmond,*	E. E.
Linch, Adolph James,	*Milwaukee,*	M. E.
Lohneis, George Henry,	*Sun Prairie,*	M. E.
Lowe, Edgar Allen,	*Colgate,*	E. E.
Luick, Adolph James,	*Milwaukee,*	M. E.
Manchester, Thomas Harris,	*Milwaukee,*	M. E.
Manegold, Robert Albert,	*Milwaukee,*	M. E.
McCoy, Lloyd Baxter,	*Milwaukee,*	E. E.
Mead, Warren Judson,	*Plymouth,*	E. E.
Meloy, Charles Thomas,	*Shullsburg,*	G. E.
Middleton, Owen William,	*Madison,*	M. E.
Miller, Ernest Baldwin,	*Westminster, Md.,*	E. E.
Moser, Albert Leo Brecht,	*Cripple Creek, Colo.,*	C. E.
Newcomb, Clyde Eugene,	*Madison,*	E. E.
Noe, Edgar James,	*Madison,*	E. E.

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Parker, Frank Ingram,	*Mondovi*,	E. E.
Parker, Howard Ashley,	*Milwaukee*,	C. E.
Parker, Wilfred Cedric,	*Milwaukee*,	C. E.
Pease, Bernard Snell,	*Richland Center*,	C. E.
Peck, Bert Hila,	*Berlin*,	E. E.
Rath, William Charles,	*Appleton*,	C. E.
Read, Benjamin Killey,	*Lake Geneva*,	M. E.
Reid, John Winfield,	*Oconomowoc*,	C. E.
Reineking, Victor Herman,	*Milwaukee*,	C. E.
Richards, Carl,	*Platteville*,	M. E.
Rickeman, Frederick Henry,	*Racine*,	E. E.
Ripley, Russell Rosier,	*Oakfield*,	M. E.
Robertson, Lawrence Bernard,	*Ft. Atkinson*,	M. E.
Robinson, Joseph Almanzo,	*Madison*,	E. E.
Robinson, William Humphrey,	*Berlin*,	C. E.
Roemer, Richard Quirin,	*Manitowoc*,	M. E.
Rosier, Frank Burdette,	*Hartford*,	E. E.
Rossing, Adolph Hjalmar,	*Argyle*,	C. E.
Rowe, Wilfred,	*Eau Claire*,	C. E.
Sacket, Walter Hobart,	*Berlin*,	C. E.
Saubert, Henry Michael,	*South Kaukauna*,	M. E.
Scheuer, Charles Henry,	*Mishicot*,	C. E.
Shadbolt, Loomis James,	*Sheboygan*,	E. E.
Smith, Lloyd Raymond,	*Milwaukee*,	M. E.
Sorem, Alfred Julius,	*Moose Lake, Minn.*,	M. E.
Stock, Harry,	*Madison*,	C. E.
Strait, Edward Nathan,	*Sparta*,	E. E.
Sustins, Walter Otis,	*Stevens Point*,	E. E.
Terhorst, Harvey,	*Milwaukee*,	E. E.
Terhorst, Stephen,	*Milwaukee*,	E. E.
Thorne, Jent George,	*Clinton, Ia.*,	C. E.
Thwing, Charles Clark,	*Minneapolis, Minn.*	E. E.
Trester, Anthony M.,	*Sheboygan*,	C. E.
Van Meter, Thomas Earl,	*Lake Geneva*,	C. E.
Wachtmann, Edmund L. Charles,	*Milwaukee*,	M. E.
Walsh, Arthur Jeremiah,	*Stanton*,	E. E.
Warren, Wyman Edgar,	*Stoughton*,	E. E.
Wetzler, William Henry,	*Beloit*,	C. E.
Wheeler, Roy Alvah,	*Milwaukee*,	E. E.
Whelan, Thomas C.,	*Chippewa Falls*,	E. E.
White, Fred Grant,	*Waterloo*,	E. E.

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Wigman, James Bernard,	*Green Bay*,	M. E.
Wild, Edward Charles,	*Mayville*,	C. E.
Wray, Edward,	*Janesville*,	E. E.
Youngblutt, Frederick Carl,	*Middleton*,	C. E.
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SOPHOMORE CLASS.

Adams, Roger Melvin,	*Dunbar*,	C. E.
Arndt, Reuben Field,	*De Pere*,	M. E.
Arnold, Douglass Luther,	*Sharon*,	E. E.
Baas, Cornelius Travenier,	*Lake Geneva*,	M. E.
Barrett, Leonard George,	*Cudahy*,	M. E.
Bates, Edward,	*Anamosa, Ia.*,	C. E.
Bechand, Jean Pierre,	*Jefferson*,	C. E.
Bachlem, Alfred,	*Plymouth*,	E. E.
Becker, Louis Carl,	*Belen, New Wex.*,	C. E.
Bennett, Benjamin Franklin, Jr.,	*Baltimore, Md.*,	C. E.
Bennett, Vivian Andrews,	*Madison*,	C. E.
Blackburn, Fred M.,	*Viroqua*,	E. E.
Blakeslee, Vvarts Haskins,	*Lake Geneva*,	G. E.
Blenel, Alexander Hugo,	*Milwaukee*,	E. E.
Bleyer, Charles Eaben,	*Milwaukee*,	M. E.
Bock, John George,	*Manitowoc*,	C. E.
Bollinger, Frank Ernst,	*Sharon*,	M. E.
Borgers, Philip Paul,	*Neillsville*,	E. E.
Bosshard, John,	*Bangor*,	C. E.
Browne, Clarence Swain,	*Las Vegas, New Mex.*,	G. E.
Burgess, Edward Wesley,	*Milwaukee*,	M. E.
Button, Henry Harrison, Jr.,	*Milwaukee*,	G. E.
Chapman, Louis Leon,	*Milwaukee*,	C. E.
Claridge, George,	*Reedsburg*,	C. E.
Clark, Stewart Lambert,	*Milwaukee*,	C. E.
Compton, Arthur Mandeville,	*Davenport, Ia.*,	E. E.
Cook, Herbert Leigh,	*Madison*,	E. E.
Cortelyou, George Stilwell,	*Brodhead*,	C. E.
Cronk, Charles Claude,	*Oregon*,	E. E.
Cutler, Manuel,	*Dodgeville*,	M. E.
Darlington, Frank George,	*Milwaukee*,	C. E.
Dean, Joseph Edward,	*Milwaukee*,	E. E.
Delgado, Altamont,	*Madison*,	E. E.
Derge, Ferdinand Julius,	*Eau Claire*,	E. E.

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Dering, Charles Maxwell,	*Portage*,	C. E.
Diehl, Alfred Samuel,	*Elroy*,	C. E.
Diestler, Gilbert Albert,	*Hortonville*,	C. E.
Dillon, Carl Duncan,	*Madison*,	C. E.
Doll, Edward Ernest,	*Milwaukee*,	C. E.
Donohue, Jerry, Jr.,	*Sheboygan*,	C. E.
Downie, George Thomas,	*Merrill*,	C. E.
Draper, George Lester,	*Cleveland, Ohio*,	G. E.
Dugan, David Hesba,	*Milwaukee*,	C. E.
Dulaney, Arthur Sim,	*Baltimore, Md.*,	E. E.
Eagle, Celestine Clement,	*Union Center*,	E. E.
Ebert, Fred Charles,	*Tomah*,	C. E.
Edmund, Charles Edward,	*Fond du Lac*,	M. E.
Erdman, Edwin Earl,	*Big Suamico*,	C. E.
Ernst, Hugo Charles,	*Janesville*,	E. E.
Estberg, Howard Claes,	*Waukesha*,	E. E.
Feige, Henrich,	*Schweidnitz, Germany*,	E. E.
Fertig, Clarence Hiram,	*Milwaukee*,	E. E.
Field, Guy Alden,	*Sharon*,	M. E.
Fisher, Arthur Augustus,	*Beaver Dam*,	C. E.
Fleischer, Henry,	*Milwaukee*,	M. E.
Foss, Glenn Arthur,	*Tomahawk*,	E. E.
Freeman, William James,	*Horicon*,	M. E.
Freschl, William Walter,	*Milwaukee*,	E. E.
Gaarden, Oscar H.,	*Spring Valley*,	E. E.
Gattiker, Willis Alfred,	*Baraboo*,	E. E.
Gelbach, Warren Allen,	*Lancaster*,	C. E.
Getts, Hubert Ernst,	*La Crosse*,	E. E.
Gielow, Edwin Herman,	*Manitowoc*,	E. E.
Gillespie, James Edward,	*Stockbridge*,	C. E.
Glab, William Nicholas,	*Dubuque, Ia.*,	M. E.
Goedjen, Albert John,	*Manitowoc*,	E. E.
Green, Charles William,	*Chicago, Ill.*,	E. E.
Green, Daniel,	*Whitewater*,	M. E.
Greisen, Elijah Charles,	*Sturgeon Bay*,	M. E.
Grunert, Arthur Earl,	*Chicago, Ill.*,	G. E.
Hachmeister, George John,	*Chicago, Ill.*,	M. E.
Hall, Charles Norton,	*Madison*,	C. E.
Heebink, Garret Egbert,	*Baldwin*,	C. E.
Heller, Harry Leopold,	*Milwaukee*,	E. E.
Henderson, Dwight Firman,	*Indianola, Ia.*,	E. E.

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Heyroth, Albert Herman,	*Manitowoc,*	E. E.
Hibbard, Allen Charles,	*Milwaukee,*	E. E.
Higson, Charles Roy,	*Madison,*	M. E.
Hine, Willard Foster,	*Fairchild,*	E. E.
Hirschberg, Ernest Samuel,	*Milwaukee,*	M. E.
Hoelz, John Bernhard,	*Burlington,*	E. E.
Holt, Thomas,	*Milwaukee,*	E. E.
Hosler, Harry,	*Reedsburg,*	E. E.
Hubbard, Edwin Palmer,	*Milwaukee,*	E. E.
Hunter, Francis Robert,	*Racine,*	G. E.
Johnson, Paul Browning,	*Madison,*	C. E.
Jones, George Wright,	*Manitowoc,*	G. E.
Kachel, William Ferdinand,	*Baraboo,*	C. E.
Kalmbach, Maurice Frederick,	*Sturgeon Bay,*	E. E.
Kaub, Verne Paul,	*Madison,*	C. E.
Kehr, Carl Merriman,	*Sterling, Ill.,*	G. E.
Keller, Arthur Edwin,	*Spring Green,*	M. E.
Ketchum, Harold Edwin,	*Madison,*	C. E.
Ketchum, Wesley Merritt,	*Racine,*	E. E.
Kirkpatrick, Woodward,	*Superior,*	G. E.
Klug, John Frederick,	*Arcadia,*	E. E.
Knuth, Tony Byron,	*Fairchild,*	C. E.
Kohn, Alvin John,	*Reeseville,*	E. E.
Kortebein, Hugo William,	*Milwaukee,*	E. E.
Kruse, Harry,	*Freeport, Ill.,*	M. E.
Kryzinski, Antony Jacob,	*Milwaukee,*	E. E.
Lawrence, Frank Henry,	*Madison,*	E. E.
Lehman, Leo Otto,	*Green Bay,*	E. E.
Lewis, Evariste Martel,	*Plantsville, Ct.,*	G. E.
Lieber, Willam Henry,	*Milwaukee,*	M. E.
Liessmann, William Alexander,	*Reedsburg,*	C. E.
Loesch, Richards Llewellyn,	*Chicago, Ill.,*	E. E.
Lucas, Thomas Joseph,	*Madison,*	E. E.
Mainland, John,	*Racine,*	M. E.
McComb, Ross Kenneth,	*Brillion,*	G. E.
McCulloch, John Alexander,	*Madison,*	G. E.
McLean, Harry Clayton,	*Madison,*	M. E.
McMullen, Cornelius,	*Dodgeville,*	E. E.
Meadowcroft, Miner,	*Poynette,*	C. E.
Meyers, Don Clyde,	*Abbotsford,*	E. E.
Miller, Daniel Webster,	*Somers,*	M. E.

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Milliren, Barton LeRoy,	*Pepin,*	M. E.
Mills, John McCuen,	*Milwaukee,*	C. E.
Moore, Charles Gilbert,	*Eau Claire,*	C. E.
Morrison, Harry Irwin,	*Eau Claire,*	E. E.
Nelson, Edward James,	*Fennimore,*	E. E.
Newcomb, Mason Watson,	*Madison,*	E. E.
Newton, Frank Arthur,	*Sparta,*	G. E.
Newton, George Cheney,	*Milwaukee,*	M. E.
Nordberg, Bruno Victor Edward,	*Milwaukee,*	M. E.
Oaks, Ray Clinton,	*Omro,*	M. E.
Olsen, Engwall,	*Marinette,*	E. E.
Olson, Norman T.,	*Tomahawk,*	C. E.
Paesler, Fred Edward,	*Chicago, Ill.,*	E. E.
Palmer, Edward Albert,	*Janesville,*	E. E.
Palmer, Guy Hageman,	*Sparta,*	E. E.
Parker, Eustace Edwin Franklin,	*Evansville,*	C. E.
Penn, William Clay,	*Juda,*	C. E.
Peters, Herbert John,	*Sharon,*	C. E.
Pfannstiehl, Jean Jacques,	*Baraboo,*	G. E.
Powell, David Alva,	*Madison,*	E. E.
Pulver, Harry E.,	*Viroqua,*	E. E.
Reinhard, Louis Ferdinand,	*Milwaukee,*	E. E.
Reynolds, Ira Lambert,	*Mineral Point,*	E. E.
Reynolds, Preston Alfred,	*Madison,*	C. E.
Richter, Edward Rand,	*Milwaukee,*	C. E.
Robbins, Arthur,	*Burlington,*	C. E.
Rohow, Grover Paul,	*Ashland,*	C. E.
Rowley, Warren J.,	*Evansville,*	M. E.
Ryan, William Henry,	*Janesville,*	C. E.
Ryder, Gana Gustavus,	*Fond du Lac,*	E. E.
Ryder, Gilbert Emery,	*Milwaukee,*	M. E.
Sage, Robert Henry,	*Delavan,*	C. E.
Sanford, Herbert Brooks,	*Bunker Hill, Ill.,*	E. E.
Sargent, Julian Downing,	*Milwaukee,*	M. E.
Schaefer, Harry,	*Davenport, Ia.,*	C. E.
Schellenger, Guy,	*Madison,*	E. E.
Schobinger, William Michael,	*Shullsburg,*	C. E.
Schroeder, Frank Charles,	*Philadelphia, Pa.,*	C. E.
Semple, James Renwick,	*Hudson,*	E. E.
Severson, Stephen Benjamin,	*Stoughton,*	E. E.
Shanks, William Alexander,	*Merrimac,*	E. E.

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Sherman, Lewis, Jr.,	*Milwaukee,*	G. E.
Shuck, Rolland Ebright,	*Davenport, Ia.,*	C. E.
Simpson, James Frederick,	*Chicago, Ill.,*	G. E.
Smeaton, Charles Alexander,	*Whitewater,*	E. E.
Smith, Orrin Cheney,	*Clinton,*	C. E.
Spencer, Emory Waldo,	*Milwaukee,*	M. E.
Spetman, Erwin Ehrig,	*Council Bluffs, Ia.,*	C. E.
Stearns, Edwin Wording,	*Chicago, Ill.,*	C. E.
Steenerson, Steenes,	*Climax, Minn.,*	C. E.
Steenrod, Terrill Finney,	*Freeport, Ill.,*	E. E.
Stoelting, Roland Emil,	*Oconto,*	C. E.
Swenson, Victor Gehard,	*Madison,*	E. E.
Teschan, Walter Frohsinn,	*Milwaukee,*	M. E.
Thayer, Benjamin Single,	*Ripon,*	C. E.
Thiel, Bruno Carl,	*Milwaukee,*	M. E.
Thogerson, Theodore Chris.,	*Mason City, Ia.,*	C. E.
Thompson, Louis Mark,	*Spokane, Wash.,*	E. E.
Thompson, Percy Ball,	*Spokane, Wash.,*	G. E.
Vaile, Louis Frederick,	*Denver, Colo.,*	G. E.
Voboril, Joseph,	*Manitowoc,*	C. E.
Wadsworth, William John,	*Kansas City, Mo.,*	M. E.
Wagner, George Ernst,	*Fond du Lac,*	E. E.
Ward, Louis Edward,	*Ft. Atkinson,*	E. E.
Warner, Frank Melville,	*Fountain City,*	M. E.
Wehausen, George Washington,	*Madison,*	E. E.
Wessel, Frederick Charles Ernst,	*Milwaukee,*	E. E.
Wetlaufer, Ervin Hudson,	*Oshkosh,*	M. E.
White, Charles Harold,	*Moline, Ill.,*	M. E.
Whitmore, Joseph Bond,	*Mukwonago,*	M. E.
Whitney, Alden Bradford,	*Madison,*	C. E.
Whyman, Richard Oliver,	*Aurora, Ill.,*	G. E.
Wied, John Clifford,	*Waupaca,*	M. E.
Wilcox, Edwin McArthur,	*Ft. Atkinson,*	E. E.
Williams, Sidney James,	*Milwaukee,*	M. E.
Wilson, Lyndon Francis,	*Ripon,*	E. E.
Winkler, William Kneeland,	*Milwaukee,*	M. E.
Wolff, Julius Fred,	*Cumberland,*	C. E.
Wyatt, George Moore,	*Fond du Lac,*	G. E.
Zappfe, Carl,	*Milwaukee,*	C. E.
Zwolanek, Joseph,	*Montfort,*	M. E.

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FRESHMAN CLASS.

Abbott, Ellis Pitt,	*Madison.*
Abbott, Harry Swift,	*Madison.*
Aleman, Augustin,	*Moreno, Buenos Aires, S.A.*
Anderson, Peter Melvin,	*Klevenville.*
Anderson, Victor Roy,	*Janesville.*
Ball, Edwin Marcotte,	*Birmingham, Ala.*
Bandli, Edward Mitchell,	*Rice Lake.*
Barker, Earl Slayton,	*Chippewa Falls.*
Barron, Fred Warren,	*Richland Center.*
Barth, Louis,	*Milwaukee.*
Bartlett, Ferdinand Von Arlt,	*Milwaukee.*
Beasley, Phin Welles,	*Marshaltown, Ia.*
Beath, John William,	*Verona.*
Becker, Walter Eugene,	*Chicago, Ill.*
Been, Charles Henry,	*Milwaukee.*
Berto, James Andrew,	*Amherst.*
Billings, Carl Emery,	*Cobb.*
Birch, Fred Graham,	*Fargo, N. Dak.*
Birkett, Miles Wren,	*Austin, Minn.*
Birkholz, Edwin Reynolds,	*Milwaukee.*
Blakenburg, Herbert Louis,	*Milwaukee.*
Blatz, Albert Valentine,	*Milwaukee.*
Bloy, Albert Emil,	*Hilbert.*
Bosshard, Elmer,	*Bangor.*
Bragg, Chester Homer,	*Emmetsburg, Ia.*
Brandel, Clarence Oliver,	*Milwaukee.*
Brown, Elmer C.,	*Manawa.*
Brunton, Frederic Kemble,	*Denver, Colo.*
Buetow, Walter Charles,	*Milwaukee.*
Burke, Edwin Eugene,	*Waukesha.*
Byron, Charles Loomis,	*Milwaukee.*
Caldwell, Walter Gaynor,	*Pewaukee.*
Campbell, Hugh Morton,	*Neillsville.*
Carleton, Willard Sherman,	*Waukesha.*
Chapin, Chester Wheeler,	*Milwaukee.*
Cleary, John Edward,	*Antigo.*
Cleveland, Frank Smith,	*Fond du Lac.*
Colladay, Edgar Bergman,	*Madison.*
Corner, Rayner Otolis,	*St. Croix Falls.*
Conger, Louis Herbert,	*Milwaukee.*

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Conlan, Lawrence Neil,	*Milwaukee.*
Conlin, William Henry,	*Madison.*
Conway, Jesse Frank,	*Antigo.*
Cook, James Knight,	*Madison.*
Cook, Wallace Ronald,	*Marinette.*
Cooper, Marion Dean,	*Black River Falls.*
Copp, Wayland John,	*Evansville.*
Cornell, William Banghart,	*Kaukauna.*
Corner, Rayner Otolis,	*St. Croix Falls.*
Crowe, George Daniel,	*Antigo.*
Crumb, Kittredge Bennett,	*Rockford, Ill.*
Cummings, Alwin Truman,	*Duluth, Minn.*
Cunningham, John Wilbur,	*Virginia, Minn.*
Daenitz, Ottoman Paul Theodore,	*Ashland.*
Dahl, Chester Theodore,	*Westby.*
Daniels, George Christian,	*Freeport, Ill.*
Davila, Lorenzo Juan,	*Juana Diaz, Porto Rico.*
Derivan, Benjamin,	*Fox Lake.*
Dittman, Fred August,	*La Crosse.*
Ditmar, Winfield Jacob,	*Milwaukee.*
Dugane, William Barstow,	*Cedar Falls, Ia.*
Dusenbery, Raymond Eugene,	*Green Bay.*
Dyer, Charles Thomas,	*South Milwaukee.*
Egelhoff, Robert Fred,	*Milwaukee.*
Faber, Merle Everitt,	*Mendota, Ill.*
Fay, Earle Owen,	*DeKalb, Ill.*
Ferman, Wilhelm Elbert,	*Stoughton.*
Field, Forrest Whipple,	*Sharon.*
Fisher, Samuel Morton,	*Chicago, Ill.*
Fox, Edwin Gordon,	*Madison.*
French, Chester Frank,	*Madison.*
French, Don William,	*Kilbourn.*
Froelich, Frank Richard,	*Glenbeulah.*
Frost, Frank Sumner,	*Union.*
Gayton, Oscar Francis,	*Pueblo, Colo.*
Gibson, Walter Gordon,	*Fond du Lac.*
Gillett, Orson Clarke,	*Superior.*
Goddard, George Theron,	*Waupun.*
Grace, Harry Holden,	*Superior.*
Gray, Glenn Arthur,	*Oregon.*
Greenleaf, Warren Theodore,	*Milwaukee.*
Grenamyer, Arthur Garfield,	*Lutonia, Ohio.*

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Grodske, Walter John,	*Milwaukee.*
Gross, George Louis,	*Stevens Point.*
Gross, Leon Lesser,	*Necedah.*
Gugler, Hans Herbert,	*Milwaukee.*
Hackett, Charles William,	*Dubuque, Ia.*
Hain, Elmer Lamont,	*Edgerton.*
Halbert, Charles Arthur,	*Augusta.*
Halliday, Malcolm John,	*Riverside, Ill.*
Halvorsen, Hjalmar Sverre,	*Westby.*
Hambrecht, Albert Lewis,	*Middleton.*
Hanson, Clyde Rexford,	*Neenah.*
Hanson, Marcus Cornelius,	*Sparta.*
Hartley, William Blair,	*Kaukauna.*
Hasbrouck, David Marks,	*Dobbs Ferry, N. Y.*
Haugan, John,	*Chicago, Ill.*
Hauser, John Edward,	*Beloit.*
Hayes, Michael Thomas,	*Janesville.*
Heath, Samuel Wild,	*Fond du Lac.*
Hejda, Joseph William,	*Manitowoc.*
Hills, Earl Vinton,	*Waupun.*
Hinckley, George Hulbert,	*Emmetsburg, Ia.*
Hintze, Philip Henry,	*Stoughton.*
Hirsch, John George,	*Milwaukee.*
Hitchcock, Frank Artemas,	*Edgerton.*
Hodges, Paul,	*Monroe.*
Hoffmann, Arthur William,	*Sheboygan.*
Holmes, Horace Mars,	*Galesburg, Ill.*
Houston, Gray Jones,	*San Antonio, Tex.*
Howe, Elmer Dean,	*Stoughton.*
Howson, Louis Richard,	*Madison.*
Hunt, Fred Emmet,	*Marinette.*
Hunter, Hobart Russell,	*Fond du Lac.*
Huntley, Lee Harvey,	*Neillsville.*
Inglis, Newton Robert,	*Bayfield.*
Ives, Frederick Walter,	*Rubicon.*
Jerrard, Leigh Patterson,	*Superior.*
Johns, Edward Francis,	*Dodgeville.*
Johnson, Nels Chester,	*Chicago, Ill.*
Judd, Richard W.,	*Canton, S. Dak.*
Kaulfuss, Julius Ernest,	*La Crosse.*
Kennedy, Frank M.,	*Hinckley, Ill.*

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Kenzler, Frank William,	*Cambridge.*
Kifer, Edwin Henry,	*Spring Green.*
Kildsig, Gustav Espersen,	*Racine.*
Killen, Sherman John,	*Cato.*
Kislingbury, Henry George	*Mineral Point.*
Kline, Jacob John,	*South Kaukauna.*
Kuentz, Oscar Otto,	*Milwaukee.*
Kuhl, Herman Charles,	*Neillsville.*
Kustermann, Walter Wolleben,	*Green Bay.*
Lautz, George Henry,	*La Crosse.*
Leete, Dwight Goodrich,	*Sparta.*
Lindemann, Walter Carl,	*Milwaukee.*
Linkey, Barrett Karl,	*Council Bluffs, Ia.*
Liver, Harold Allan,	*Wonewoc.*
Lokke, Julius Henry,	*Baldwin.*
Longshore, George Monroe,	*Grinnell, Ia.*
Lueders, Walter John,	*Chicago, Ill.*
Lumsden, Robert Roy,	*Elroy.*
Lunde, Sigurd Gilbertson,	*Wausau.*
Lyle, Stanley David,	*Madison.*
MacDonald, Charles William,	*Aitkins, Minn.*
Marsh, Henry,	*Lake Geneva.*
Mathews, William Wyman,	*De Pere.*
McDougall, Colin,	*Whitewater.*
Melcher, Austin Gode,	*Hinsdale, Ill.*
Merrill, Edward Cressey,	*Oneida.*
Meyer, Henry William Jr.,	*Appleton.*
Morgan, Alexander William,	*Madison.*
Moriarity, Eugene Winfield,	*Broadland, S. Dak.*
Mortenson, Oscar,	*Waupaca.*
Mott, Charles Smith,	*Milwaukee.*
Mumm, Edward F.,	*Wausau.*
Murphy, James Oliver,	*Racine.*
Murray, Francis Joseph,	*New Richmond.*
Nelson, Oscar Herman,	*Stoughton.*
Neubauer, Frank John,	*De Pere.*
Nicholson, Delos Charles,	*Edgerton.*
Nordenholt, George Dietrich,	*Oak Park, Ill.*
North, Kent Beaugrande,	*Cleveland, Ohio.*
Oeflein, Walter William,	*Milwaukee.*
O'Keefe, Harry Hart,	*Appleton.*
Osborne, Robert Charles,	*Milwaukee.*

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Outzen, Andrew Newton,	*Kewaunee.*
Pankow, Theodore John,	*Marshfield.*
Pedley, Chester Arthur,	*Etna.*
Perwien, Richard,	*Milwaukee.*
Petrie, Walter William,	*Fond du Lac.*
Phelps, Harlow Donnell,	*Denver, Colo.*
Pierce, Alfred Thompson,	*Madison.*
Pitz, Arthur Herman,	*Manitowoc.*
Platten, William Joseph,	*Green Bay.*
Porter, Lloyd Wardall,	*Evansville.*
Porter, Warren Newman,	*Evansville.*
Post, Frank Freeman,	*Black River Falls.*
Post, Harold Lorenzo,	*Weyauwega.*
Post, Lee Herbert,	*Black River Falls.*
Radermacher, Harley Adolph,	*Barron.*
Rahn, Bruno,	*Milwaukee.*
Reed, James Olan,	*Canandaigua, N. Y.*
Reinhard, Gustave Adolph,	*Milwaukee.*
Reuter, John Jackson,	*Blue Mounds.*
Rhodes, George Wallace,	*Galesville.*
Rice, Clarence James,	*Milwaukee.*
Rice, Ernest Frederick,	*Milwaukee.*
Rice, Webster Batcheller,	*Highland Park, Ill.*
Rich, Corydon Lawrence,	*Oshkosh.*
Rideaut, William Lovell,	*Draper, Utah.*
Riess, DeWitt Frank,	*Sheboygan.*
Ringle, Leander Lewis,	*Wausau.*
Roberts, Earl Pierce,	*Oconomowoc.*
Robinson, Wallace Alexander,	*Oshkosh.*
Rockhoff, Bert Edward,	*Manitowoc.*
Rogers, Sumner Barnes,	*Milwaukee.*
Rosholt, John Nichols,	*Oconomowoc.*
Runkel, Frank Frederick,	*Livingston.*
Rusch, Paul Herman,	*Merrill.*
Sanford, Harry Silvester,	*Lake Geneva.*
Schamell, Otto Alfred,	*Milwaukee.*
Scharfenburg, George Casper,	*Edgerton.*
Schiess, Roy Edward,	*Chicago, Ill.*
Schlapkokl, Ferdinand,	*Davenport, Ia.*
Schneider, William Henry,	*Oshkosh.*
Schoenmann, John Henry,	*Spring Green.*

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Schuler, Frank Joseph,	*Milwaukee.*
Schwarting, Herbert Weber,	*Milwaukee.*
Scribner, Charles Archibald,	*Fond du Lac.*
Sears, Charles Louis,	*Milwaukee.*
Seibel, Raymond,	*Madison.*
Semrad, Charles Albert,	*Highland.*
Shapiro, Joseph,	*Antigo.*
Sheldon, Thomas Drummond,	*Darlington.*
Sherman, John Rockwood,	*Brodhead.*
Sherman, Walter John,	*Plainfield.*
Shorey, Edwin Royal,	*Oshkosh.*
Simonds, Herbert,	*Chicago, Ill.*
Simpson, Verazno Klodolff,	*Chicago, Ill.*
Slayton, Clarence Hall,	*Oshkosh.*
Smith, Andrew Adelbert,	*Waterford.*
Solsrud, Hilman,	*Whitehall.*
Soper, Fred Dana,	*Madison.*
Spencer, Fred Lewis,	*Waupaca.*
Stalker, Carlton Hendrickson,	*Madison.*
Steinfort, Carl Edward,	*Ephraim.*
Stevenson, Thomas Downey,	*Indianapolis, Ind.*
St. George, Arthur Baldwin,	*Nashota.*
Strait, Albert Lea,	*Milton Junction.*
Suhm, Erwin Roman,	*Milwaukee.*
Sullivan, James Francis,	*Monches.*
Sutherland, Ross,	*Janesville.*
Swenson, Albert Paul,	*Madison.*
Tibbitts, Fayette Amos,	*Hingham.*
Tierney, John Thomas,	*Woodland.*
Urbutt, Carl Fred,	*Oconomowoc.*
Van Derzee, Gould Whitney,	*Milwaukee.*
Van Loon, William Owen,	*Midway.*
Van Patten, John Frederick,	*Evansville.*
Vosburgh, Frank Jones,	*Oak Park.*
Vosburgh, John Beecher,	*Genoa Junction.*
Vrooman, John Robert,	*Superior.*
Wadsworth, Melvin Ray,	*Lake Geneva.*
Wahl, Louis Edward,	*Antigo.*
Waite, Walter Edwin,	*Brooklyn.*
Wallber, Wilbert Charles,	*Milwaukee.*
Walser, Edward William,	*Austin, Ill.*

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Weber, Cornelius George,	*Theresa.*
Weber, William Gustav,	*Milwaukee.*
Weber, William Henry,	*Racine.*
Webster, Harold,	*Columbus.*
Wedlock, Frank Vivian,	*Mineral Point.*
Weis, Irwin Lewis,	*Chicago, Ill.*
Wheeler, George William,	*Plymouth.*
Wheeler, Harvey Babcock,	*Madison.*
Whittaker, Elmer Horace,	*Fond du Lac.*
Wieman, Henry Krumsick,	*Watertown.*
Wiggins, Edward Ruger,	*Janesville.*
Wilber, Charles McCollum,	*Madison.*
Wilder, George Green,	*Chicago, Ill.*
Williams, Mark Levius,	*Fox Lake.*
Wilmer, Edward G.,	*Madison.*
Wilson, Graham Eugene,	*Viola.*
Wilson, Leslie Arthur,	*Berlin.*
Wippermann, William,	*Chilton.*
Witt, Louis,	*New Holstein.*
Yewdale, Joseph Ames,	*Milwaukee.*
Zeisler, George, Jr.,	*La Crosse.*

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SPECIAL STUDENTS.

Anderson, Noel Shipman,	*Milwaukee,*	G. E.
Arnold, Douglas Luther,	*Sharon,*	M. E.
Bails, Harry Willard,	*Elyria,*	E. E.
Benedict, Guy Albert,	*Oshkosh,*	E. E.
Boleng, Lee Hayes,	*Tamarack,*	E. E.
Bradshaw, John Ward,	*Superior,*	E. E.
Bryant, John Owen,	*Chippewa Falls,*	G. E.
Clark, Albert Barnes, Jr.,	*Honolulu, H. I.,*	C. E.
Coleman, Lester Lyman,	*Toledo, Ia.,*	C. E.
Daniels, John Albert Boredolf,	*Freeport, Ill.,*	C. E.
Gruenhagen, Richard Elmer,	*Oshkosh,*	M. E.
Haertel, Carl Frederick,	*Madison,*	E. E.
Hudson, William Douglas,	*St. Louis, Mo.,*	C. E.
Ingals, Francis Ephraim,	*Chicago, Ill.,*	G. E.
Kimball, Frank William,	*Janesville,*	E. E.
Larkin, Fred Viall,	*Verona,*	G. E.

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Lynch, Raymond Michael,	*Cedarburg,*	M. E.
Marks, Frederick Robert,	*Chicago, Ill.,*	E. E.
Peck, Orwin K.,	*Mitchell, S. Dak.,*	C. E.
Rockwell, Charles Adelbert,	*Ft. Atkinson,*	C. E.
Rudy, Ora Hermann,	*Indianapolis, Ind.,*	C. E.
Smith, Jack Morgan,	*Austin, Texas.,*	E. E.
Sperry, David Rockwell,	*Batavia, Ill.,*	M. E.
Steenson, Burt Edward,	*Whitewater,*	E. E.
Thomas, Edward Anderson,	*Waukesha,*	E. E.
True, Henry Alfonso, Jr.,	*Denver, Colo.,*	C. E.
Van Hagan, Arthur Edward,	*Chicago, Ill.,*	E. E.
Vroman, John Charles,	*Chicago, Ill.,*	E. E.
Wachenfeld, Stephen Charlemange,	*Oregon, N. J.,*	M. E.

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ADULT SPECIAL STUDENTS.

Allen, Maynard Edward,	*Indianapolis, Ind.,*	C. E.
Beckwith, Arthur James,	*Milwaukee,*	——
Boon, Leonard Francis,	*Hortonville,*	——
Brownlee, Frank Richard,	*Milwanukee,*	——
Buchanan, John William,	*Madison,*	C. E.
Burgess, Louis Green,	*Milwaukee,*	——
Burns, Louis Andrew,	*Madison,*	C. E.
Carey, Alfred Blake,	*Wild Rose,*	C. E.
Chatham, Ralph Frank,	*Milwaukee,*	——
Claridge, Joshua,	*Reedsburg,*	C. E.
Edwards, Evan Cadwallader,	*Appleton,*	C. E.
Edwards, John Prosser,	*Milwaukee,*	C. E.
Gallup, Rockwell Loring,	*Denver, Col.,*	M. E.
Harley, William Sylvester,	*Milwaukee,*	M. E.
Hart, Simeon Thompson,	*Farmington, Conn.*	——
Hartman, Lawrence Merle,	*Tyrone,*	——
Hinckley, Dana Alexander,	*Claremont, Minn.*	——
King, Thurman Patrick,	*Spring Green,*	——
Knowles, William Alward,	*Milwaukee,*	——
Larson, James Herbert,	*Milwaukee,*	M. E.
Mack, Carl K.,	*Madison,*	——
Macumber, Karl Hill,	*Beloit,*	M. E.
Manegold, Frank Miller John,	*Milwaukee,*	M. E.
Martin, Andrew,	*Ashland,*	——

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McCreary, Arthur Garfield,	*Richland Center,*	—
Mendez, Lauro Lopez,	*Apam, Hidalgo, Mex.,*	—
Metz, John Joseph,	*Milwaukee,*	—
Meyer, Arnold Frank,	*Milwaukee,*	—
Meyer, Odd,	*Chicago, Ill.,*	—
Morton, James Duncan,	*Madison,*	E. E.
Murray, Donald John,	*Wausau,*	—
Naset, Wilhelm Otto,	*Bloomer,*	C. E.
O'Brien, Leo Lewellyn,	*Sparta,*	E. E.
Perry, Willard Newton,	*Algoma,*	E. E.
Porter, Harry Allen,	*Mukwonego,*	E. E.
Purple, Cullen Dean,	*Galesville,*	C. E.
Rector, Mark Davis,	*Chicago, Ill.,*	C. E.
Roberts, John Archibald,	*Columbus,*	—
Robinson, Arthur Woodburn,	*Albany, N. Y.*	—
Schliefer, August Charles,	*Cedarburg,*	—
Schmidt, Ferdinand Carl,	*Madison,*	—
Schnitzler, Theodore Ernest,	*Milwaukee,*	—
Schwede, Frederick August,	*Sawyer,*	—
Shoop, Roy Bassett,	*Madison,*	M. E.
Simmons, George Matthew,	*Viola,*	E. E.
Solberg, Arthur Leroy,	*Beloit,*	—
Stearns, James Henry,	*Sheboygan,*	G. E.
Steigerwald, Edward Simon,	*Milwaukee,*	—
Strand, Tor,	*Norway,*	—
Thickens, John Herman,	*Appleton,*	—
Thompson, Isaac Thorbus,	*Blair,*	M. E.
Wagle, Oswal Olson,	*Madison,*	E. E.
Wilson, Ralph Warren,	*Milwaukee,*	—
Wright, Allen Edgar,	*Perrysburg, N. Y.*	C. E.

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College of Law.

SENIOR CLASS.

Anderson, Albert,	*North Valley.*
Barry, Hamlet Joseph,	*Denver, Col.*
Belitz, Arthur Frederick,	*Milwaukee.*
Best, Ernest Oscar,	*Madison.*
Boyle, Alonzo Cook,	*McGregor, Ia.*
Bulkley, Robert Crandall,	*Whitewater.*
Carpenter, Henry Fayette,	*Janesville.*

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Clarke, Ray Willis,	*Milton.*
Corstvet, Alexander Oscar,	*Deerfield.*
Detling, John Matthew,	*Sheboygan.*
Foelske, Henry Edward,	*Milwaukee.*
Frank, Julius Paul,	*Chicago, Ill.*
Franzke, John Henry,	*Forest Junction.*
Freeman, Charles Rollin,	*Menomonie.*
Gardner, Harry Irving,	*Grand Rapids.*
Gilman, Charles Hesler,	*Madison.*
Gleason, John Lyman,	*Arcadia.*
Hagenah, William John,	*Madison.*
Hammersley, Charles Edward,	*Madison.*
Hamilton, William George,	*Madison.*
Heinemann, Fred Voelchert,	*Appleton.*
Higbee, Jesse Edward,	*La Crosse.*
Hopewell, Oscar Reeves,	*Tekamah, Neb.*
Jaseph, Lynn D.,	*Neillsville.*
Kasberg, Alexander,	*Madison.*
Kunny, Charles John,	*Fredonia.*
Leahy, Stephen James,	*Marshfield.*
Leahy, Thomas Edward,	*Platteville.*
Ludlow, Leo de Ruche,	*Madison.*
Lurvey, Lawson E.,	*Oakfield.*
McLees, Charles Erastus,	*Viroqua.*
Minahan, Eben Roger,	*Green Bay.*
Morgan, Frank Clinton,	*Billings, Mont.*
O'Brien, John Edward,	*Eden.*
Palmer, Thomas Joseph,	*Milton.*
Pullen, Lloyd Winston,	*Milwaukee.*
Randall, Clifford Ellsworth,	*East Troy.*
Roethke, Adolph Herman,	*Chilton.*
Rogers, Chester Garfield,	*Stevens Point.*
Rogers, Frank Horton,	*Ft. Atkinson.*
Rose, Earl Brown,	*Milwaukee.*
Runyard, Eugene Melvyn,	*Antioch, Ill.*
Sargent, Frank Byron,	*Seymour.*
Schanen, William Frank,	*Lake Church.*
Spiering, Edgar Edmund,	*Mayville.*
Steinmetz, Christian,	*Milwaukee.*
St. Germaine, Thomas Leo,	*Ashland.*
Stolen, Ole Andrew,	*Mt. Horeb.*

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Stone, Charles Harry,	*Reedsburg.*
Thomas, James E.,	*Waukesha.*
Trump, Rodger Murphy,	*Milwaukee.*
Wehe, Waldemar Carl,	*Milwaukee.*
Yates, Frank Edward,	*Washburn.*

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MIDDLE CLASS.

Bogue, Andrew Stevenson,	*Poynette.*
Briere, Charles Edward,	*Grand Rapids.*
Carpenter, Matthew Hall,	*Milwaukee.*
Cowell, William Albert,	*Kewaunee.*
Donovan, Louis Patrick,	*Eagle Grove, Ia.*
Fahey, Thomas Patrick,	*Hillsboro.*
Frawley, Thomas Francis,	*Eau Claire.*
Hedding, Adelbert James,	*Port Washington.*
Hemingway, Charles Henry,	*Hanover.*
Hoffmann, Albert John,	*Brookfield.*
Howley, John Edward,	*Madison.*
Huck, Vincent Henry,	*Dotyville.*
Jones, Gad,	*Wild Rose.*
Jones, Thomas Harvey,	*Dousman.*
Kelsey, William Thomas,	*Baraboo.*
Kennedy, Robert Edward,	*Superior.*
Kline, Mark Anthony,	*Milwaukee.*
Kreutzer, Oscar William,	*Wausau.*
Lange, Charles August Henry,	*Stevens Point.*
Larish, Frank Ainslee,	*Cincinnati, O.*
Lau, Arnold,	*Cedarburg.*
Law, David Sidney,	*La Crosse.*
Ledvina, Lawrence Wencel,	*Kellnerville.*
Lerum, Arne Christophers,	*Cottage Grove.*
Locke, Morris West,	*Altoona.*
Loveland, William Arnold,	*Monticello.*
McGowan, Patrick Henry,	*Kewaunee.*
Melzner, Arthur Burdell,	*Yankton, S. D.*
Miller, Lauretz,	*Yankton, S. D.*
Minton, Robert Parcells,	*Los Angeles, Cal.*
Mullen, Leon Theron,	*Waupun.*
Page, Archy Nathan,	*Neillsville.*
Parks, Howell Albro-Gardiner,	*Chicago, Ill.*

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Reynolds, Benjamin William,	*Tomah.*
Rhodes, William Thomas,	*Waupun.*
Roys, William Bacon,	*Madison.*
Schneider, Walter Carl,	*Kankakee, Ill.*
Segnitz, Herbert,	*Milwaukee.*
Snider, Glen Rust,	*Kilbourn.*
Stark, Henry Walter,	*Milwaukee.*
Sullivan, Raymond Ambrose,	*Dubuque, Ia.*
Tarrell, Lucius Ambrose,	*Darlington.*
Taylor, Charles Arthur,	*Barron.*
Wagener, William Emil,	*Sturgeon Bay.*
Wollaeger, John Gustav,	*Milwaukee.*
Wrabitz, Voyta,	*Kewaunee.*
Zeidler, Herbert Louis,	*Lomira.*

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JUNIOR CLASS.

Angell, Ralph Carroll,	*Moors, N. Y.*
Arnold, Willard Henry,	*Sharon.*
Barlow, Elmer Elbert,	*Arcadia.*
Bell, Harry Garfield,	*Tomah.*
Best, Louis Engelhardt,	*Milwaukee.*
Clark, John Bernard.	*Stoughton.*
Cowley, Stephen James,	*Larmoore.*
Crowns, Arthur John,	*Nekoosa.*
DeCamp, Frederick Ezekiel,	*Lansing, Mich.*
Dempey, Edward Joseph,	*Nashota.*
Doyle, William Thomas,	*Fennimore.*
Drury, Alfred Leslie,	*Union Grove.*
Evans, Newton William,	*Dousman.*
Fellenz, Lewis John,	*Campbellsport.*
Fischer, Russell Price,	*Waukegan, Ill.*
Friedrich, Alexander Ernest,	*Madison.*
Galloway, Alvin Wilson,	*Poynette.*
Genzmer, John Milton,	*Hartford.*
Glicksman, Harry,	*Milwaukee.*
Grace, Clarence,	*Superior.*
Grogan, Francis Wilbrod,	*Marinette.*
Hanson, Franklin Harold,	*Mauston.*
Harney, Lewis Leon,	*Schofield.*
Hart, Arthur Eugene,	*Turtle Lake.*

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Kading, August,	*Reeseville.*
Kelley, James Lewis,	*Fond du Lac.*
Kinney, John Thomas,	*Fond du Lac.*
Lieber, George John,	*Milwaukee.*
Liljeqvist, Lawrence Andrew,	*Wausau.*
Liver, John Irving,	*Hartford.*
Lorenz, Ira Sherburn,	*Milwaukee.*
Lueck, Arthur William,	*Juneau.*
Maine, George Edwin,	*La Crosse.*
Mann, David Leroy,	*Neosho.*
Mayhew, William Alexander, Jr.,	*Clinton.*
McMahon, Stephen John,	*Manitowoc.*
Miller, Edward William,	*Marinette.*
Mistele, Lawrence John,	*Jefferson.*
Moyer, Malcolm Bridgman,	*Montevidee, Minn.*
Natwick, Oscar O.,	*Viroqua.*
Newcomb, Paul Revere,	*Pepin.*
Noble, Fred Henry,	*West Butte, Mont.*
Pomainville, Edward Nelson,	*Grand Rapids.*
Quimby, Willard J.,	*Weyauwega.*
Raymond, Elam Jewett, Jr.,	*Chippewa Falls.*
Sanderson, Thomas Alexander,	*Sturgeon Bay.*
Sapiro, Jacob Harry,	*Milwaukee.*
Seelman, Ernest,	*Milwaukee.*
Smith, Lynn Henry,	*Jefferson.*
Smongeski, Antone Lawrance,	*Two Rivers.*
Snider, John Roy,	*Kilbourn.*
Squire, James Linus,	*Waterloo.*
Stewart, Edward Darrow,	*Fargo, N. D.*
Sullivan, Daniel,	*Menasha.*
Taylor, George William,	*Pleasant Prairie.*
Timlin, William Henry,	*Milwaukee.*
Wallace, Edward Dorsey,	*Oak Park, Ill.*
Wheeler, Harry Earl,	*La Crosse.*
Wing, Theodore Turner,	*Elgin, Ill.*
Wolters, Oscar Lambertus,	*Sheboygan.*
Wooledge, Gaius Sibley,	*Madison.*

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STUDENTS IN COLLEGE OF LETTERS AND SCIENCE ELECTING LAW STUDIES.

Abbott, Chauncey, Jr.,	*Schuyler, Neb.*
Allen, David King,	*Allenville.*
Barry, John Sumner,	*Phillips.*
Bogue, David,	*Poynettė.*
Dean, Albert Briggs,	*Madison.*
Dunwiddie, Stanley Gray,	*Janesville.*
Fulton, David Langdon,	*Hudson.*
Geisse, Harold Llewellyn,	*Chilton.*
Griggs Victor Rockwell,	*Kewaunee.*
Griswold, Willard Seward,	*Waukesha.*
Hirshberg, Henry Adler,	*Milwaukee.*
MacGraw, William Don,	*Chippewa Falls.*
McGillivray, William J.,	*Black River Falls.*
Pallanch, Arthur John,	*Fredonia.*
Paulson, Henry Olaus,	*Perry.*
Pfund, Carl Frederick,	*Madison.*
Pritchard, George Scott,	*Aurora, Ill.*
Richardson, Clarence Lemuel,	*Chippewa Falls.*
Schmidt, Richard August,	*West Depere.*
Schram, Peter Henry,	*Madison.*
Stiles, Nestor Luverne,	*Cherokee, Ia.*
Twesme, Albert Theodore,	*Blair.*
Welton, Chauncey Rex,	*Madison.*

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College of Agriculture.

LONG COURSE.

Brindley, Thaddeus Hayward,	*La Crosse.*	Junior.
Brown, Paul Vincent,	*Racine.*	Freshman.
Burch, Dallas Stockwell,	*Milwaukee.*	Freshman.
Carpenter, Nathaniel Elliott,	*Evanston, Ill.*	Freshman.
Carroll, William Peter,	*Wales,*	Junior.
Charles, William Mortimer,	*Madison,*	Sophomore.
Cheney, John Raymond,	*Milwaukee,*	Sophomore.
Cooper, Walter Henry,	*Whitewater,*	Freshman.
Cottingham, Erwin Yandell,	*Evanston, Ind.*	Freshman.
Courter, James Carlton,	*Hinsdale, Ill.,*	Ad. Special 1.
Davis, John Archibald,	*Racine,*	Junior.
DeHaven, Lloyd Omer,	*Monroe,*	Sophomore.

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Delwiche, Edmond Joseph,	*Madison,*	Sophomore.
Devine, Bennett Marvin,	*Evansville,*	Sophomore.
Fisher, Carey Carlton,	*Steward, Ill.,*	Junior.
Fleischer, Oscar Felix,	*Chicago, Ill.,*	Sophmore.
Fowler, Harry King,	*Madison,*	Junior.
Fowler, Herbert Atherton,	*Madison,*	Sophomore.
Gangstad, Julius Siverine,	*Deerfield,*	Freshman.
Germann, Henry Louis,	*Brackett,*	Junior.
Gorman, Edward Patrick,	*Wausau,*	Sophomore.
Gorman, Walter Thomas,	*Wausau,*	Freshman.
Griffith, Leon Osee,	*Monroe,*	Sophomore.
Hammer, Bernard Wernick,	*Hillsboro,*	Freshman.
Handschin, Walter Frederick,	*Calumetville,*	Special 2.
Hartung, William John,	*Milwaukee,*	Freshman.
Haskins, Lien Pyrrhas,	*Barnum,*	Senior.
Henry, Arnon Taylor,	*Madison,*	Senior.
Hine, George Sherwood,	*Fairchild,*	Sophomore.
Hoffmann, Conrad,	*Phillips,*	Junior.
Jarvis, John Demoss,	*La Crosse,*	Senior.
Johnson, Albert Aaron,	*McFarland,*	Sophomore.
Johnson, James,	*Deerfield,*	Freshman.
Johnson, Olaf Benjamin,	*Chicago, Ill.*	Sophomore.
Jones, Edward Richard,	*Bangor,*	Junior.
Jones, Orren Lloyd,	*Hillside,*	Freshman.
Kadonsky, Joseph Frank,	*Dorchester,*	Sophomore.
Knight, Charles,	*Mineral Point,*	Freshman.
Lamont, Ronald Malcolm,	*Greenwood,*	Ad. Special 1.
Linde, Charles Albert,	*Chicago, Ill.,*	Ad. Special 1.
Lothe, Herbert,	*Stoughton,*	Freshman.
Mahony, William John,	*Blue Mounds,*	Sophomore.
Milward, James Garfield,	*Madison,*	Sophomore.
Moseley, Raymond Winthrop,	*Madison,*	Freshman.
Murdock, Clayton Ross,	*Brodhead,*	Sophomore.
Musser, Clive Newcomb,	*Madison,*	Freshman.
Nelson, Martin,	*Viroqua,*	Senior.
Norgord, Christian Percival,	*Bangor,*	Special 3.
Norris, Arthur John,	*Milwaukee,*	Sophomore.
Orton, Frank S.,	*Lancaster,*	Special 2.
Page, Guy Fred,	*Berlin,*	Sophomore.
Parsons, William Amos,	*Whitewater,*	Special 3.
Ranney, Perry Calvin,	*Elkhorn,*	Senior.

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Reif, Walter John,	*Madison,*	Freshman.
Ringland, Josiah Allen,	*Boone, Ia.,*	Junior.
Robertson, James Brownlee,	*Milwaukee,*	Freshman.
Rogers, Augustus James, Jr.,	*Milwaukee,*	Sophomore.
Rosenthal, Ernst,	*Oshkosh,*	Sophomore.
Ryall, Bryant Raymond,	*Augusta,*	Freshman.
Schroeder, Chris,	*Kewaunee,*	Junior.
Schwartz, Ray Roland,	*Troy Center,*	Senior.
Schwenker, Philip Frederick,	*La Crosse,*	Freshman.
Showalter, Ray Peter,	*Janesville,*	Freshman.
Slaby, Edward George,	*Kewaunee,*	Freshman.
Smith, Arthur George,	*Blue Mounds,*	Freshman.
Spencer, Fred,	*Waupaca,*	Freshman.
Steenbock, Harry,	*Madison,*	Freshman.
Steinhaus, Walter Ernest,	*Sheboygan,*	Freshman.
Sylvester, Walter William,	*Seymour,*	Freshman.
Terrazas, William Fred,	*Chihuahua, Mexico,*	Senior.
Thompson, David Orvin,	*East Troy,*	Senior.
Thorkelson, Carl Edward,	*Racine Junction,*	Junior.
Tormey, John Lawless,	*Fennimore,*	Special 2.
Trautmann, Fred Loraine,	*Whitewater,*	Sophomore.
Trowbridge, Edwin,	*Mondovi,*	Junior.
Uehling, Otto Louis,	*Richwood,*	Senior.
Wallin, Allgot,	*Chicago, Ill.,*	Senior.
Walline, Austin,	*Upland, Cal.,*	Freshman.
Weir, Wilbert Walter,	*Mukwonego,*	Ad. Special 1.
Williams, William Arthur,	*Dodgeville,*	Freshman.
Wood, Robert Arthur,	*Chicago, Ill.,*	Freshman.
Young, Rosco Byron,	*Wausau,*	Sophomore.

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SHORT COURSE.

Second Year.

Almon, Perry Tonsley,	*Weyauwega.*
Batho, Lester,	*Plum City.*
Bathrick, Herbert Redfield,	*Marshfield,*
Bell, George Sylvester,	*Madison.*
Bemish, Frank,	*Hinsdale, Ill.*
Berg, William Edward,	*Bloomer.*
Beule, Elmore Alexander,	*Fox Lake.*
Bilkey, Joseph William,	*Portage.*

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Bixby, Phillip Taylor,	*Appleton.*
Blackmun, Eugene George,	*West Bend.*
Blakely, Albert Josiah,	*Neenah.*
Bliese, Raymond F.,	*Pewaukee.*
Bowden, Charles Benjamin,	*West Salem.*
Burns, Fred John,	*Charlotte, N. Y.*
Burton, Melvin Roy,	*Elcho.*
Capener, Howard,	*Baraboo.*
Carey, Clinton Henry,	*Redgranite.*
Chase, James Philip,	*Sun Prairie.*
Christensen, Alfred,	*Walsh.*
Clusen, Reinhold,	*Manitowoc.*
Colenso, James Eade,	*Madison.*
Compton, Miles Alfred,	*Chicago, Ill.*
Conway, John Patrick,	*Elroy.*
Cooper, Arthur Allan,	*Elizabeth, Ill.*
Crow, Robert Ray,	*Monroe.*
Dale, Clarence Herbert,	*Soldiers Grove.*
Davis, John Frederick,	*Barneveld.*
Eastman, Seth Arno,	*Sheboygan Falls.*
Eddy, Allen Richard,	*Lancaster.*
Evans, William Harvey,	*Wales.*
Fawcett, Louis Sewell,	*Orfordville.*
Feathers, Oliver Calvin,	*Manawa.*
Frauenheim, Oscar Reynold,	*Random Lake.*
Fruit, Earl James,	*Arthur.*
Gallagher, Michael Martin,	*Elroy.*
Ganschow, William Charles,	*Bonduel.*
Gerhardt, Walter Charles,	*Neillsville.*
Ghastin, William Judson,	*Twin Bluffs.*
Gorman, John Peter,	*Fredonia.*
Glindinning, Harry Lencon,	*Shullsburg.*
Grebe, Fred Philip,	*Randolph.*
Gruhle, William Henry,	*Barton.*
Guptill, Lawrence Rundle,	*New Auburn.*
Haass, Otto Paul,	*Merton.*
Hamilton, Thomas Samuel,	*Westfield.*
Hansen, Norman Emil,	*New Auburn.*
Hardt, Walter Robert Henry,	*Janesville.*
Harland, Robert Erwin,	*Cottage Grove.*
Hatch, James Reuben,	*Waupaca.*

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Heike, Rudolph Herman,	*Mondovi.*
Hendricks, Lewis Edward,	*Campbellsport.*
Hermanson, Herbert,	*Rio.*
Hetts, Gary,	*Ft. Atkinson.*
Howard, Arthur Eugene,	*Whitewater.*
Hubbard, Harvey,	*Fredonia.*
Jarr, Herman Daniel,	*Manitowoc.*
Jenson, Fred,	*Waupaca.*
Johnston, Frank Roy,	*Appleton.*
Joos, Frank Benjamin,	*Fountain City.*
Keipper, Edward Louis,	*Menomonee Falls.*
Krogan Henry,	*Viroqua.*
Kuehn, Charles Augustus,	*Brandon.*
Lassell, Wallace,	*Orfordville.*
Lawrence, Floyd Windsor,	*La Crosse.*
Lewellin, George Casper,	*Waterloo.*
Lewis, Eri H.,	*Whitewater.*
Little, Harvey Henry,	*Evansville.*
Lord, Karl Williams,	*Cambridge.*
Main, Herbert Allan,	*Ft. Atkinson.*
*Mayhew, Joseph Oschar,	*Greenbush.*
McCauley, Rex Chadbourne,	*Osseo.*
McConnell, Robert Elmer,	*Tomah.*
Melville, David Howard,	*Colgate.*
Menn, Bennie Arthur,	*Norwalk.*
Meurer, Paul, Jr.,	*Genoa Junction.*
Miles, William Fredenal,	*Oconomowoc.*
Miller, Charles Henry,	*Racine.*
Miller, Harvey H.,	*Evansville.*
Morris, George Charles,	*Ridgeway.*
Muehleisen, Gottlieb,	*Alma.*
Mulcahy, John William,	*Belmont.*
Nevens, Clarence Hunter,	*Winnebago, Ill.*
Olsen, Otto,	*Walsh.*
Pedersen, Carl Adolph,	*Cambridge.*
Pitt, Ernest H.,	*Whitewater.*
Raichle, William,	*Frenchville.*
Rankin, Everett John,	*Templeton.*
Rankin, Walter David,	*Menomonee Falls.*
Raven, John Wesley,	*Bloomer.*

*Died February 18, 1905.

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Redelings, Henry,	*Marinette.*
Risch, John Henry,	*Montana.*
Risum, Louis Elmer,	*Brodhead.*
Rosenow, Arthur Frederick,	*Oconomowoc.*
Rundell, Brian Leroy,	*Livingston.*
Rustad, John,	*Black River Falls.*
Salter, Ray Floyd,	*West Bend.*
Schellenger, Roy George,	*Warren, Ill.*
Shape, Oscar Julius,	*Milwaukee.*
Smiley, James Bemus,	*Albany.*
Spaulding, Clyde Ferris,	*Oconomowoc.*
Stantorf, Walter Henry,	*Barnum.*
Stebbins, Allen Porter,	*Eagle.*
Steinhoff, Walter John,	*Platteville.*
Stienstra, Samuel John,	*Galena, Ill.*
Stocking, Wilbur Fosbay,	*Weatogue, Conn.*
Stommel, Eugene,	*Mayville.*
Strand, Oscar Martin,	*Rice Lake.*
Suhr, Adolph Arthur,	*Cochrane.*
Tallmadge, James Johnston,	*Milwaukee.*
Thompson, Melvin,	*Mt. Horeb.*
Treleven, Guy Thomas,	*Omro.*
Troeller, Jacob Martin,	*Rubicon.*
Tubbs, George Peter,	*Seymour.*
Tully, Andrew,	*Delavan.*
Turner, Roy Stoughton,	*Stoughton.*
Vandercook, Ray Isaac,	*Linden, Mich.*
Van Heuklon, Willard Alfred,	*Appleton.*
Vogel, Albert Herman,	*Shiocton.*
Walker, Ray Clifton,	*Plainville.*
Warmington, Prentice George,	*Honey Creek.*
Wilkowske, Robert Theodore,	*Mishicot.*
Whelan, John Vale,	*Mondovi.*
Wright, Marvin Tompkins,	*Waupun.*
Zabel, Julius George,	*Deerfield.*

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SHORT COURSE.

First Year.

Aavang, Henry Oscar,	*Barnevald.*
Accola, John Henry,	*Prairie du Sac.*

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Accola, Lawrence,	*Prairie du Sac.*
Amdall, Martin,	*Dallas.*
Anderson, Adolph W.,	*Portage.*
Anderson, Alvin,	*Whitewater.*
Anderson, Martin,	*Morrisonville.*
Anderson, Thomas Elert,	*Wild Rose.*
Anderson, William Henry,	*Elroy.*
Ashton, Arthur Blaine,	*Belmont.*
Ashton, Charles Henry,	*Belmont.*
Ashton, William Lester,	*Belmont.*
Barmore, Trevor Jay,	*Juda.*
Barr, Demetrius,	*Chat.*
Bell, LeGrand L.,	*Brooklyn.*
Bennett, Philip Thayer,	*Chicago, Ill.*
Best, Frank Everett,	*Brooklyn.*
Bjerrum, Martin Peter,	*Racine.*
Blackburn, Robert Graver,	*Xenia, Ill.*
Boggess, Charles Perry,	*Catlin, Ill.*
Boucsein, Gust Louis,	*Detroit Harbor.*
Brook, James Walter,	*Salem.*
Brown, Edward Dudley,	*West Salem.*
Brown, Stanley Livingston,	*Friendship, N. Y.*
Buck, Julius Butler,	*Appleton.*
Burr, Harvey Ray,	*Marshall.*
Campbell, George Phillip,	*Augusta.*
Chatterton, Ray Webb,	*Basco.*
Chloupek, Victor Anton,	*Mishicot.*
Chrisler, Harley Eldred,	*Lodi.*
Christensen, George Walter,	*Chippewa Falls.*
Christiansen, William,	*Chippewa Falls.*
Chrysler, Harvey Seymour,	*Osseo.*
Clack, John Herbert,	*Appleton.*
Cobb, Homer Allen,	*Sun Prairie.*
Conger, Theodore Hedges, Jr.,	*Madison.*
Curtis, Joseph,	*New Lisbon.*
Dahlen, Melvin Theodore,	*Westby.*
Daniel, John Thomas,	*Cambria.*
Davies, John,	*Mineral Point.*
Deleglise, Leo L.,	*Antigo.*
Delsman, Theodore,	*Manitowoc.*
Devine, Bennett Marvin,	*Evansville.*

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Donner, Christian,	*Gotham.*
Ebert, Edmund Daniel,	*Tomah.*
Ellis, Vernie George,	*Evansville.*
Ely, Scott Dixon,	*Spring Creek.*
Erickson, Erick,	*Soldiers Grove.*
Ferber, William August,	*Bay City.*
Fischer, Louis,	*Haven.*
Finsnes, Andrew,	*Stoughton.*
Ford, Thomas Ruthoford,	*Milwaukee.*
Fox, Edgar Wilson,	*Quarry.*
Freeman, Roy Fulton,	*Racine.*
George, Samuel A.,	*Madison.*
Gibbard, Peter James,	*Ripon.*
Gimre, Karl Henry,	*Madison.*
Goddard, Mark,	*Ft. Atkinson.*
Goedeke, George,	*Sheboygan Falls.*
Goldsmith, Richard B.,	*Weyauwega.*
Graumm, Norval,	*Dallas.*
Griffin, Melvin,	*Briggsville.*
Grimstad, Alvin Canute,	*Barneveld.*
Grimwood, Ivan Joseph,	*Bristol, Ill.*
Griswold, Harry Wilbur,	*West Salem.*
Halvorsen, Theodore,	*Whitewater.*
Hansen, Harry Hubert,	*Fontenoy.*
Hanson, Nels Peter,	*Amherst Junction.*
Hargrave, Robert Oliver,	*Ripon.*
Harriman, Fred E., Jr.,	*Appleton.*
Harris, Ruthven Elmer,	*Warrens.*
Harrison, George,	*Wilton.*
Heidemann, Otto,	*Kiel.*
Heldstab, Christian Otto,	*Cameron.*
Helmbolt, Burton,	*Orfordville.*
Herdrich, Samuel,	*Adell.*
Hetts, Eugene,	*Ft. Atkinson.*
Hickox, Harold Eugene,	*Milwaukee.*
Hill, Otto,	*Mt. Horeb.*
Hinz, Arthur Frederick,	*Ripon.*
Hoefner, Fred Carl,	*Manitowoc.*
Huebsch, Lewis Andrew,	*Galena, Ill.*
Imig, Arthur Harold,	*Neillsville.*
Jensen, Rasmus,	*Green Bay.*

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Johnson, Alden O.,	*Weyauwega.*
Johnson, Charles Garfield,	*Clintonville.*
Kaiser, Edward Casper,	*Granaville, Ia.*
Kieler, Edward,	*Louisburg.*
Killoy, John Edward,	*Sextonville.*
Kimble, Newcomb,	*Milton Junction.*
Kindschi, Lyman Oren,	*Prairie du Sac.*
Kinney, Robert Olin,	*Hurricane.*
Kinney, Rolla Ernest,	*Potosi.*
Klovdahl, Ole Johnson,	*Wittenberg.*
Klussendorf, Fred Edward,	*Milwaukee.*
Kroll, John Martin,	*Shawano.*
Lachmund, Robert,	*Sauk City.*
Lanpheer, Harry,	*Glenbeulah.*
Larsen, Charles Louis,	*Chicago, Ill.*
Lawton, Alvie Ray,	*Viola.*
Lee, Ernest Wright,	*Granton.*
Leech, George Edwin,	*Windsor.*
Longley, Harvey Newman,	*Dousman.*
Lyon, Wilson Brown,	*Merrilan.*
Malum, Oscar,	*Chetek.*
Markham, Frederick Clements,	*Independence.*
Matheson, Martin,	*Sawyer.*
Mathews, Milton Dale,	*Helenville.*
McKichan, Floyd Emile,	*Patch Grove.*
Meekin, Hamilton Wright,	*Fond du Lac.*
Mehnert, Jesse Garfield,	*Buffalo, N. Y.*
Meyer, Louis Jacob,	*Mishicot.*
Millar, William, Jr.,	*Menomonie.*
Mohr, Oswald William,	*Milwaukee.*
Mueller, August William,	*Manitowoc.*
Nelson, Elmer Brian,	*Osceola.*
Nies, Peter,	*Morrison.*
Ochsner, Arthur Cleveland,	*Plain.*
Orr, Homer Leslie,	*Madison.*
Orr, Willard David,	*Madison.*
Palmer, Howard Payne,	*Baraboo.*
Pattee, William Clyde,	*Plover.*
Pearson, Bert,	*Lake Geneva.*
Peck, Henry Milton,	*Marshall.*
Persons, Marvin Brace,	*Exile.*

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Peters, Ezra,	*Sharon.*
Peterson, Perry Oliver,	*Amherst.*
Peterson, Theodore Alven,	*New Glarus.*
Pfeiffer, Walter Alfred,	*West Bend.*
Pope, Leon Thomas,	*Sun Prairie.*
Post, Harry L.,	*Sextonville.*
Pratt, Scott Leonard,	*Madison.*
Premo, Kenneth Lyle,	*Prairie du Sac.*
Reese, James LeRoy,	*Mineral Point.*
Richards, John Lawrence,	*Louisburg.*
Richardson, George Freeman,	*Milwaukee.*
Riley, Dolph Edson,	*Hillsboro.*
Robinson, Virgil,	*Gotham.*
Roethel, Herman,	*Kiel.*
Sampson, Philip Allen,	*Audubon, Ia.*
Sanborn, Eugene Hiram,	*Madison.*
Sawin, Lester Monroe,	*Brooklyn.*
Schilling, Edward Henry,	*Onalaska.*
Scholtz, Charles W.,	*Pewaukee.*
Scott, Gerhard,	*Madison.*
Schrickel, Edward August,	*Green Bay.*
Sharpee, Carl Andrew,	*Rio.*
Sharpee, Endre Andrew,	*Rio.*
Skenandore, Edward Edgar,	*Oneida.*
Smille, Raimond Keith,	*Washington, D. C.*
Smith, Henry Burns,	*Brooklyn.*
Smithwick, Martin,	*Kewaunee.*
Snyder, Wesley Velorus,	*Lancaster.*
Sommerfeld, John,	*Brandon.*
Sorenson, Hilbert,	*Franksville.*
Speerschneider, Fred,	*Bay Settlement.*
Steiner, George Jacob,	*Lomira.*
Straka, Edward E.,	*Kellnersville.*
Syftestad, Gerhard,	*Madison.*
Thomas, Albert H.,	*Chippewa Falls.*
Thompson, Alfred N.,	*Delavan.*
Thomson, Robert,	*Marshall.*
Thorstad, Nels Holberg,	*Deerfield.*
Tomkins, Orville Scott,	*Ashland.*
Tretsven, John Oscar,	*Milltown.*
Tweeten, Theodore,	*Madison.*

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Vandervort, Rollie,	*Tomah.*
Vinger, George,	*Argyle.*
VonLanyi, Oscar,	*Calvary.*
Walker, Nathan Gibbs,	*Riverside, Ill.*
Wall, William,	*Weyauwega.*
West, Ray Nelson,	*Ripon.*
Weston, Albert William,	*Audubon, Ia.*
Whittaker, Horace,	*Fond du Lac.*
Wied, Edward W.,	*Waupaca.*
Winter, Lloyd Henry,	*Eau Claire.*
Withycombe, Harold James,	*Mineral Point.*
Woodard, Frederick,	*Bloomer.*
Wright, Wray C.,	*Eau Claire.*
Zerbel, Lewis Richard,	*Merrillan.*

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DAIRY COURSE.

Ahlswede, Arthur John,	*Kolberg.*
Alêman, Eugenio,	*Buenos Aires, Argentine Rep.*
Altwegg, Christ Albert,	*Ettrick.*
Armstrong, Edly John,	*Cushing.*
Austin, Hubert Walter,	*Pewaukee.*
Baker, Edward Frederick,	*Johnson Creek.*
Barron, Walter Bailey,	*Richland Center.*
Bauer, Alfred Alouis,	*Le Roy.*
Berndt, Frederick John Edward,	*West De Pere.*
Bill, Benjamin Jephthah,	*Genoa Junction.*
Bjerregaard, Carl,	*New Franken.*
Bornheimer, Henry,	*Withee.*
Boss, Edward Benedict,	*Oshkosh.*
Bower, Perry Edward,	*Boscobel.*
Brandt, William Farned,	*Ziegler.*
Britton, Ira Wescott,	*Gilmanton.*
Bruni, Carl,	*Monroe.*
Brunner, Julius,	*Durand.*
Bruyette, Robert,	*Manawa.*
Bryan, Beldon Thomas,	*Evansville.*
Carpenter, Bernie,	*Valton.*
Cooke, Samuel Shadock,	*Independence.*
Curt, Herman,	*Almena.*
Dahl, M. Robert,	*York.*

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Deering, William Albert,	*Grimm.*
Diehl, Emil Christ,	*Spring Green.*
Doane, Maurice Jasper,	*Stevens Point.*
Eby, John Christ,	*Poysippi.*
Ellsworth, Clare,	*Lone Rock.*
Emmerton, Homer William,	*Bloomer.*
Engelbert, Henry,	*Forestville.*
Fessenden, Clyde Dale,	*Bloomer.*
Fiefarek, Lawrence F.,	*Peshtigo.*
Flick, William John,	*Dunnville.*
Frommader, Irving George,	*Sullivan.*
Freck, Paul Frederick,	*Fall River.*
Fehling, Emery August,	*Reeseville.*
Gaebe, Otto Henry,	*New Salem, N. D.*
Gates, Robert Lessil,	*Random Lake.*
Grewe, Emil,	*Cadott.*
Grumann, William,	*Two Rivers.*
Hamilton, Leonard, Jr.,	*Westfield.*
Hanson, Edward H.,	*York.*
Hanson, Edward Ralph,	*Omro.*
Hanson, Olaf H.,	*York.*
Heinrich, Charles Edward,	*New London.*
Herman, Antoine Charles,	*Tonet.*
Herman, Linder,	*Argyle.*
Hoh, Levi Henry,	*Appleton.*
Holshausen, Elroy,	*Chippewa Falls.*
Hurt, Edward,	*Knapp.*
Husband, Frederick James,	*Balsam Lake.*
Huse, George H.,	*Black Creek.*
Jensen, Walter Hans,	*Waupaca.*
Johnson, Samford J.,	*Ettrick.*
Jones, Charles Jerry,	*Fond du Lac.*
Klein, Arthur,	*Barton.*
Kohlmetz, Robert Louis,	*Oconomowoc.*
Kottke, Paul,	*Manchester.*
Kuepfer, John Gottfried,	*Mayville.*
Larseh, Peter,	*Pittsfield.*
Laurent, Fabian	*Rio Creek.*
Laurent, John Michel,	*Rio Creek.*
Lawrence, Benjamin,	*Boscobel.*
Lee, Sever,	*Misha Mokwa.*

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Long, Edward Charles,	*Salem, Ohio.*
Malec, Emil,	*Madison.*
Markeson, Leonard Arthur,	*Ashland.*
Maas, Emil Henry,	*Oostburg.*
Matthews, Lawrence,	*Edmund.*
Matznick, Gustav Martin,	*Valders.*
McBean, Norman R.,	*Grafton.*
McCauley, Paul,	*Dunnville.*
McDonald, William John,	*Oakwood.*
McMillin, Clark Ray,	*Whitewater.*
Meyer, Richard Benjamin,	*Unity.*
Miller, Charles Octavius,	*Plainfield.*
Mueller, Jacob,	*Madison.*
Nelson, James,	*Waupaca.*
Nelson, Melvin Daniel,	*Sawyer.*
Nickle, William Rudolph,	*Amery.*
Niquette, Raymond Joseph,	*Lena.*
Noltner, William Tador,	*Waunakee.*
Novatny, Louis,	*Oshkosh.*
O'Hearn, Frank,	*Disco.*
Olson, Carl Henry,	*Bloomer.*
Ouradnik, Henzel James,	*Luxemberg.*
Pagel, Frank William,	*Medford.*
Paulson, William Frederick,	*Ogdensburg.*
Peterson, Frederick,	*Pepin.*
Quackenbush, Harry,	*Sparta.*
Rashleger, James,	*Antigo.*
Rasmussen, Emil George,	*Weyauwega.*
Reinertson, Jonas C.,	*Milwaukee.*
Riess, Henry William,	*Elkhart.*
Ruebensaal, Frank Joseph,	*Elroy.*
Rusch, Charles,	*Antigo.*
Russell, William McCorkle,	*San Francisco, Cal.*
Scheel, Ernest William,	*Globe.*
Schenk, Christ,	*Stitzer.*
Schildt, Charles John,	*Horicon.*
Schlueter, August Herman,	*Rib Falls.*
Schmaling, Otto John,	*Avalon.*
Schultz, Herman Charles,	*Shawano.*
Schwingel, Francis Philip,	*Avoca.*
Seyfert, George Samuel,	*Washington.*

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Shelve, Carl Milhum,	*Almena.*
Sieger, William,	*Genoa.*
Sieger, Peter Frank,	*La Crosse.*
Sigerson, Simon,	*Spring Valley.*
Skofstad, LeRoy,	*Clinton.*
Smetna, John,	*Deerbrook.*
Starkey, William Charles,	*Cazenovia.*
Stemper, Joseph,	*Leapolis.*
Sternke, Edward William,	*Johnson Creek.*
Stoneman, John Aloyious,	*Forestville.*
Thor, Joseph,	*Norman.*
Tornquist, Isidro,	*Buenos Aires, Argentine.*
Trester, Hubert Gustav,	*Winona, Minn.*
Turck, Edward,	*Beaver Dam.*
Waite, Earl Lamer,	*Oshkosh.*
Walker, Curtis Lovejoy,	*Northport.*
Warren, Scott H.,	*Plain.*
Watson, Frank John,	*Little Prairie.*
Wavrunck, Thomas Joseph,	*Rice Lake.*
Weber, George Wesley,	*Edmund.*
West, Philip Frank,	*Watertown.*
Whiting, Harry M.,	*Jefferson.*
Wichman, William Albert,	*Marshfield.*
Wilkowski, Hugo August Fred,	*Mishicot.*
Wuethrich, Alfred,	*Woodland.*
Wyss, William,	*Kenoskee.*
Zaharias, Frank Tony,	*Pulaski.*
Zahorik, Frank Joseph,	*Cato.*
Zick, Herman,	*Beloit.*

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SUMMER SESSION OF 1904.

Graduates.

Adley, Lafayette Roswell, Ph. B., University of Wisconsin,	*Madison.* Botany, Chemistry.
Alexander, William A., B. A., University of Minnesota,	*Hendrum, Minn.* Physical Culture.
Austin, Elliott, Talbot, B. S., University of Michigan,	*Sterling, Ill.* Physiography, History.

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Balzer, George John, *Madison.*
B. A., University of Michigan, Physics.

Barnett, James Duff, *Madison.*
B. A., College of Emporia, Political Science.

Bartelt, Arthur Herman, *Ft. Atkinson.*
B. A., University of Wisconsin, History, Education.

Bestor, May, *Minneapolis, Minn.*
M. A., University of Minnesota, Spanish, Latin.

Brand, Helen Page, *Detroit, Mich.*
B. A., Bryn Mawr College, Latin, Education.

Briggs, George Wesley, *Madison.*
B. L., University of Wisconsin, Greek, German.

Brownson, Mary Wilson, *Washington, Pa.*
B. A., Pennsylvania College for Women, History.

Cady, Elsie Clare, *Green Bay.*
B. A., University of Wisconsin, English, Education.

Case, Effie, *Madison.*
M. A., University of Wisconsin, History, German.

Clum, George Victor, *Earlville, Ill.*
B. A., Ohio State University, History, Education, Political Economy.

Cole, Erma Eloise, *Fayette, Ia.*
B. A., Upper Iowa University, Latin, German.

Congdon, Mirah, *La Crosse.*
B. A., University of Wisconsin, German.

Crothers, Hayes B., *Sparta, Ill.*
B. A., Monmouth College, Education, Psychology.

Demorest, Arthur Justin, *Muscatine, Ia.*
B. A., Cornell College, Latin, Greek.

Evans, Della J., *Evansville, Ind.*
B. A., Indiana University, English.

Fairbank, Alfred Frank, *Rosendale.*
B. L., University of Wisconsin, Chemistry, Botany.

Field, Arthur Sargent, *Madison.*
M. A., Dartmouth College, Economics.

Finkbeiner, Thomas, *Naperville, Ill.*
Ph. M., Northwestern College, German.

Fish, Herbert Clay, *Madison.*
B. L., University of Wisconsin, History, Latin, Pol. Science.

Hardwick, Frances Tiley, *Winona, Minn.*
B. A., London University, Physics.

Hein, Willard H., *Madison.*
Ph. B., University of Wisconsin, English, German.

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Heuer, George Julius,	***Madison.***
B. S., University of Wisconsin,	Anatomy.
Holdsworth, John T.,	***Philadelphia, Pa.***
B. A., New York University,	History, Economics.
Homburg, Frederick,	***Cincinnati, O.***
B. S., University of Cincinnati,	German Economics, Chemistry, Geometry.
Humphrey, May Martyn,	***Bloomington.***
B. A., University of Wisconsin,	German, Latin.
King, Anna Belle,	***Madison.***
M. A., University of Wisconsin,	Education, Psychology.
King, Leo Hamilton,	***Green Bay.***
M. A., Holy Cross College,	Anatomy, Bacteriology.
Kittle, William,	***Oconomowoc.***
Ph. B., University of Wisconsin,	History, French, Latin.
Kunerth, William,	***La Crosse.***
B. A., University of Wisconsin,	Bacteriology, Botany.
Lee, Olav,	***Northfield, Minn.***
M. A., Luther College,	Latin.
Lemke, Charles Frederick,	***Wausau.***
B. A., University of Wisconsin,	Political Science, Education, Economics, History.
Lentz, Mary,	***Freeport, Ill.***
B. A., University of Illinois,	German, Analytical Geometry.
Love, Mattie H.,	***Waukesha.***
Ph. B., University of Wisconsin,	English.
Marsh, Ellen F.,	***Northfield, Minn.***
B. L., University of Wisconsin,	Botany.
Marsh, Janette E.,	***Bristol.***
Ph. B., Oberlin College,	German.
Marshall, Ruth,	***Appleton.***
M. S., University of Wisconsin,	Anatomy, Botany.
McNeil, Anna Holmquist,	***Janesville.***
Ph. M., University of Wisconsin,	French, German.
Mellen, Sara C.,	***Reedsburg.***
B. A., Lake Forest College,	Education, English.
Merk, Helen,	***Sauk City.***
B. S., University of Wisconsin,	German.
Merk, Josephine M.,	***Sauk City.***
B. L., University of Wisconsin,	History, English.
Merrill, Harriet B.,	***Milwaukee.***
M. S., University of Wisconsin,	French, Spanish.
Michael, Lillian E.,	***Athens, O.***
M. A., Ohio University,	Latin.

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Moseley, Anna B., *Madison.*
M. A., University of Wisconsin, Latin.

Moseley, Flora C., *Madison.*
B. L., University of Wisconsin, English.

Nichols, Maurice B., *Superior.*
Ph. B., University of Wisconsin, Botany.

Olive, Edgar William, *Madison.*
Ph. D., Harvard University, Botany.

Parsons, Grace, *Grinnell, Ia.*
Ph. B., Iowa College, Latin, German.

Pease, Raymond B., *Madison.*
B. L., University of Wisconsin, English.

Persons, Warren M., *Madison.*
B. S., University of Wisconsin, Economics.

Porter, Susan M., *Janesville.*
B. L., University of Wisconsin, Latin, History.

Reed, George M., *Beaver Falls, Pa.*
B. A., Geneva College, Botany.

Schmidt, Edward W., *Red Wing, Minn.*
M. A., University of Wisconsin, Anatomy, Botany, Zoology.

Schmidt, Paul G., *Northfield, Minn.*
M. A., University of Minnesota, Physiography, Mathematics, Petrology.

Schoch, Parke, *Philadelphia, Pa.*
M. A., Lafayette College, Economics, History.

Sears, Rolla Gilbert, *Madison.*
M. A., University of Wisconsin, German.

Shenk, Hiram Herr, *Anville, Pa.*
B. A., Ursinus College, Economics, History.

Skrivseth, Benedict Oliver, *Cedarburg.*
Ph. B., University of Wisconsin, Botany, History, Physiography, Petrology.

Stauffacher, Samuel Jacob, *Monroe.*
Ph. B., Northwestern College, History, Education, Economics.

Stephenson, Maude Martha, *Madison.*
B. L., University of Wisconsin, Algebra, German.

Stevens, Mrs. E. Ray, *Madison.*
B. S., University of Wisconsin, English.

Stinson, Orin Lorenzo, *Madison.*
B. A., University of Wisconsin, Greek, Latin, Education.

Thrall, Bessie Hombroch, *Evansville, Ind.*
M. A., Radcliffe College, English.

Thrall, Mary Louise, *Evansville, Ind.*
M. A., Radcliffe College, English.

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Vorhies, Charles Taylor, *Mt. Pleasant, Ia.*
B. S., Wesleyan University, Chemistry.

Waller, Phoebe Marshall, *Maysville, Ky.*
B. S., Oxford College, English, Trigonometry.

Webster, Thomas, *Madison.*
Ph. B., University of Wisconsin, Botany.

Wheelwright, Orville Willian, *Belleville.*
B. A., University of Wisconsin, Education, Physical Chemistry.

Whitcomb, Georgiana M., *Madison.*
B. L., University of Wisconsin, Botany, Physics.

White, Marion B., *Champaign, Ill.*
Ph. B., University of Michigan, Physics, Mathematics.

Wiggins, Katherine, *Janesville.*
B. S., Beloit College, Physiography, Physics, Botany, Chemistry.

Wilson, John Thomas, *Beaver Dam.*
B. A., Indiana University, Physical Chemistry, Physics.

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Undergraduates and Teachers.

Acker, Frank William, *Denver, Colo.*
Alicia, Sister Mary, *Madison.*
Allen, David King, *Oshkosh.*
Astell, Mollie, *Madison.*
Baker, Frances May, *Madison.*
Baker, George Jacob, *Alma Center.*
Baker, Joseph Henry, *Merrill.*
Baley, Earl Francis, *Wonewoc.*
Ballantyne, Edith Virtue, *Bloomington.*
Barnes, Mary Louelle, *Morrison, Ill.*
Barney, Godfrey Waldo, *Mauston.*
Bussett, Harry Kendall, *New York City.*
Beaver, Grace May, *Baraboo.*
Bell, Willis James, *Allison, Ia.*
Bennett, Mabel Alma, *Kilbourn.*
Berge, Matthew Garland, *Eau Claire.*
Bergen, Paul, *Madison.*
Birkholz, Edwin Reynolds, *Milwaukee.*
Bommersheim, John Baptist, *Milwaukee.*
Bowden, Garfield Arthur, *Pepin.*
Bradley, Carolyn Hale, *Madison.*
Braun, Adolph Rudolph, *Milwaukee.*
Brown, Oscar Phelps, *Manawa.*

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Brownell, George Holmer,	*Janesville.*
Buchholz, Louise Augusta,	*Appleton.*
Budd, Ethel Lockwood,	*Marlow.*
Burnett, Eleanor Louise,	*Madison.*
Bushnell, Lillian May,	*Platteville.*
Cantwell, Lucy May,	*Stevens Point.*
Cavanaugh, James Franklin,	*Kewaskum.*
Cleary, John Edward,	*Antigo.*
Cogswell, Caroline Duston,	*Madison.*
Cogswell, Robert Wm.,	*Madison.*
Colburn, Willis Paul,	*Cassville.*
Cole, Adrian H.,	*Madison.*
Conger, Louis Herbert,	*Milwaukee.*
Conway, Jesse Frank,	*Antigo.*
Cowgill, James Daniel,	*Oconto Falls.*
Crawford, William Wilberforce,	*Mazomanie.*
Crowe, Belle Chisholm,	*Madison.*
Curtis, Raymond Wm.	*Waupun.*
Cushing, Percy Marks,	*Milwaukee.*
Davila, Lorenzo,	*Juana Diaz, Porto Rico.*
Davis, Benjamin Franklin,	*Madison.*
DeBoth, Edward R.,	*Green Bay.*
Derge, Julius Ferdinand,	*Eau Claire.*
Dodd, Gertrude Pearl,	*Wauwatosa.*
Dodge, Bernard Ogilvie,	*Algoma.*
Dohm, John Walter,	*Dane.*
Dominic, Sister Mary,	*Madison.*
Draper, George Lester,	*Cleveland, O.*
Dunlap, Robert Bancroft,	*Waukesha.*
Dusenbery, Raymond Eugene,	*Green Bay.*
Eddy, Flora Elizabeth,	*Rockford, Ill.*
Egelhoff, Robert Fred,	*Milwaukee.*
Ekern, Helga Marie,	*Madison.*
Ely, Richard Sterling,	*Madison.*
Epstein, Charlotte Wilmina,	*Portage.*
Estee, Rush Gillan,	*Milwaukee.*
Evert, Karl,	*Madison.*
Farris, John,	*Monroe.*
Fenton, Polly,	*Madison.*
Ferguson, Bess Carolynn,	*Madison.*
Festerling, Edwin Garfield,	*Sheboygan.*

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Fidelis, Sister Mary,	*Madison.*
Field, Guy Alden,	*Sharon.*
Fjoslin, Sigrid,	*Clinton.*
Foote, Edward Thomas,	*Milwaukee.*
Ford, Annie Gordon,	*La Crosse.*
Frederick, Katharine Christian,	*Mendota, Ill.*
Fulton, Cornelia N.,	*New York City.*
Garrity, Anna Regina,	*Prairie du Chien.*
Gilbert, Edna Marion,	*Madison.*
Gove, George Ross,	*Madison.*
Griffiths, Ellen J.,	*Milwaukee.*
Grinde, Hilda Christine,	*Madison.*
Gullidge, Elmer Ellsworth,	*Antioch, Ill.*
Haertel, Lillian Emilie,	*Madison.*
Hall, Edgar Albert,	*Milwaukee.*
Halsey, Cora Moore,	*Oshkosh.*
Hamann, Friedrich Arthur,	*Milwaukee.*
Hamilton, Frederic Rutherford,	*Richland Center.*
Hammer, Bernard Wernick,	*Hillsboro,*
Hammer, Horace Maynord,	*Willow, Ind.*
Hancock, Homer Virgil,	*Yorktown, Ind.*
Hanson, Charles,	*Monroe.*
Hanson, Marcus Cornelius,	*Sparta.*
Harder, Edmund Cecil,	*Milwaukee.*
Hart, Julian George,	*Gillingham.*
Harter, Emma Leona,	*Gotham.*
Hedderick, Mary Elizabeth,	*Evansville, Ind.*
Hedges, Clair Frank,	*Neenah.*
Heinz, Adolph,	*Madison.*
Hibbard, Allen Charles,	*Milwaukee.*
Hiebel, Max Edmond,	*Waterloo.*
Hoyt, James Mitchell,	*Chicago, Ill.*
Hubbard, Margaret Elizabeth,	*Carlinville, Ill.*
Hutton, John Wetherill,	*Westtown, Penn.*
Irving, Thos. Jos.,	*Watertown.*
Jaeck, Ora Mabel,	*Omro.*
Jaeger, Rudolph John,	*Dubuque, Ia.*
Jensen, Marie E.,	*Waupaca.*
Johnson, Isabel Reid,	*Portage.*
Johnston, John Thor,	*Milwaukee.*
Jones, George Wright,	*Manitowoc.*
Jones, Gwendolyn Gaynor,	*Madison.*

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Jones, Ida Isabelle,	*Madison.*
Jones, Marion Burr,	*Madison.*
Kauffman, Jesse,	*Hillsboro.*
Kavanagh, Cecilia Olive,	*Clear Lake.*
Kelley, Chase William,	*Madison.*
Kissling, Arthur Charles,	*Milwaukee.*
Kremer, Paul Henry,	*Milwaukee.*
Lamfrom, Leon Benedict,	*Milwaukee.*
Latshaw, Stanley Riddle,	*Wausau.*
Lea, Clara Alice,	*Madison.*
LeFebvre, Clarence Charles,	*Green Bay.*
Leins, Emma,	*West Bend.*
Leins, Lenore,	*West Bend.*
Liver, John Irving,	*Hartford.*
Loeb, Max,	*Appleton.*
Lorpabel, Claire,	*Mazomanie.*
Lueders, Walter John,	*Chicago, Ill.*
Lyons, Nettie Regina,	*Madison.*
Main, Lois,	*Madison.*
Manning, Florence Edna,	*Belvidere.*
Maynard, Emma Hughes,	*Milwaukee.*
McLaughlin, Will Allen,	*Eland.*
McNamara, Charles,	*Montello.*
Meade, Harry Paul,	*Boyd.*
Mercer, Samuel Alfred Browne,	*Mazomanie.*
Metz, John Jos.,	*Milwaukee.*
Michelson, Ida Geneva,	*Mt. Horeb.*
Mikulski, Ottilie Johanna,	*Chicago, Ill.*
Miner, Ernest Darius,	*Merrill.*
Minsart, Anton,	*Green Bay.*
Morrissey, Maurice,	*Walworth.*
Morse, Nona Troy,	*Nashua.*
Muench, Joseph Frederick,	*Buffalo.*
Musser, Clive Newcomb,	*Madison.*
Nalty, Josephine Agnes,	*Monroe.*
Neckerman, Reuben Julius,	*Madison.*
Nelson, Martin,	*Viroqua.*
Nelson, Tillie Eliza,	*Madison.*
Newcomb, Paul Revere,	*Pepin.*
Norgord, Christian Percival,	*Madison.*
Olmstead, Lewis William,	*Madison.*
Osen, Clyde Augustus,	*Wausau.*

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Paddock, Gladys,	*Prophetstown, Ill.*
Parsons, Forest Lee,	*Berlin.*
Paulus, George Melchior,	*Chetek.*
Pease, Clifford Coleman,	*Madison.*
Pfeifer, Fred Julius,	*Plymouth.*
Pfeifer, Henry Alfred,	*Plymouth.*
Pierce, Helen Meroe,	*Madison.*
Pietzsch, Harriet Shumway,	*Baraboo.*
Preston, Charles Herbert,	*Madison.*
Purin, Charles Maltador,	*Milwaukee.*
Quan, Arthur Winfred,	*Madison.*
Quan, Clara Eugenie,	*Madison.*
Rathjen, Edwin Frederick,	*Madison.*
Reed, Harry S.,	*Lansing, Mich.*
Rehm, Walter Arthur,	*Chicago, Ill.*
Reineking, Walter Clarence,	*Milwaukee.*
Richardson, Raymond Oramel,	*Rockford, Ill.*
Rideout, Wm. Lovell,	*Draper, Utah.*
Robbins, Frank Thomas,	*La Crosse.*
Roberts, Gilbert Jeremiah,	*Merrill.*
Roecker, Wm. Frederich,	*Spencer.*
Rohlinger, Adam Ferdinand,	*Milwaukee.*
Rood, Leonard Jos.,	*Merrill.*
Saby, Anna Gunella,	*Baldwin.*
Schlabach, Otto Maxwell,	*La Crosse.*
Schmitt, Ella,	*Green Bay.*
Schmoyer, Winnie Victoria,	*Menomonee Falls.*
Schoch, Elsie Gross,	*Philadelphia, Pa.*
Schoen, Raymond Wm.,	*Madison.*
Schranck, Edward Valentine,	*Milwaukee.*
Schule, Paul Adolphe,	*Chicago, Ill.*
Sell, Martha Erbach,	*New Holstein.*
Severin, Henry Charles,	*Milwaukee.*
Severin, Harry Henry,	*Milwaukee.*
Shafer, Maude Foster,	*Milwaukee.*
Shaw, Margaret Harlan,	*Geneseo, Ill.*
Shipke, Edith,	*Waunakee.*
Snow, William Matthew,	*Mineral Point.*
Solsrud, Hilman,	*Whitehall.*
Sorley, Stanley Manleus,	*Weyauwega.*
Steil, Wm. Nicholas,	*Madison.*

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Stephens, Jean Murray,	*Madison.*
Stivers, Samuel Antes,	*Madison.*
Stockman, Rebecca,	*Milton Junction.*
Stoeber, Mary Margaret,	*Madison.*
St. Sure, Jeanette Lucile,	*Madison.*
Suhm, Edwin Roman,	*Milwaukee.*
Sullivan, Arthur George,	*Eau Claire.*
Suter, Jesse Dwight,	*Madison.*
Swint, Katherine Marie,	*Madison.*
Taylor, Carrie Sabelle,	*Madison.*
Taylor, John Atkinson,	*New Lisbon.*
Thompson, Robert Kirk,	*Milwaukee.*
Trabue, Elsie,	*Milwaukee.*
Uglow, Clara Wilmot,	*Palmyra.*
Uihlein, Oscar Louis,	*Milwaukee.*
Upson, James William,	*Mansfield, O.*
Vanderboom, Edward John,	*Marinette.*
Van Hise, Olive May,	*Demorest, Ga.*
Van Natta, Bessie Mae,	*Platteville.*
Verran, Laura Ellen,	*Madison.*
Warner, William Willis,	*Saginaw, Mich.*
Washburn, Charles M.,	*Viola.*
Wells, Earl Harold,	*Madison.*
Weniger, Willibald,	*Milwaukee.*
Wesley, Alfred Enrique W.,	*Buenos Aires, Argentine Rep.*
White, Rhoda Mabel,	*Madison.*
Wightman, Nellie Maud,	*Richland Center.*
Wilson, Ella Florence,	*Viroqua.*
Winter, Thomas Bradbury,	*Madison.*
Woffenden, Adah Anastasia,	*Madison.*
Woolworth, Walter Wallace,	*Darlington.*
Works, George Alan,	*Augusta.*
Wright, Milton Raleigh,	*New London.*
Young, Agnes Lydia,	*Wausau.*
Zeiher, Emeline Elizabeth,	*West Bend.*
Zeidler, Richard,	*Howard Lake.*
Zellhoefer, Marilla,	*Palmyra.*

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SUMMER SESSION FOR APPRENTICES AND ARTISANS.

Graduates.

Forest, Harry Verne, *Madison.*
B. S., Kansas Agricultural College, Engineering.

Kearney, William John, *Chicago, Ill.*
B. of M. E., Purdue University, Engineering.

Kicklighter, Charlie H., *Atlanta, Ga.*
M. E., Georgia School of Technology, Engineering.

Sieker, William Christian, *Milwaukee.*
B. S., University of Wisconsin, Engineering, Mathematics.

Troolen, Ole N., *Brookings, So. Dak.*
M. S., South Dakota Agricultural College, Engineering.

Vosskuehler, Joseph H., *Columbus, O.*
M. E., Ohio State University, Engineering.

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Undergraduates.

Aléman, Augustin, *Buenos Aires, Argentine Rep*
Allen, William Taylor, *Milwaukee.*
Baender, Fred George, *Oakland, Cal.*
Bartlett, Edwin Ball, *Milwaukee.*
Bayha, George Lewis, *Monongahela, Pa.*
Benton, Ernest Edward, *Baraboo.*
Berssenbrugge, Bernard, *Milwaukee.*
Bigelow, Charles Miller, *Milwaukee.*
Bolles, Edgar James, *Madison.*
Borchert, Ernst, *Milwaukee.*
Braun, Fred Charles, *Belvidere.*
Braun, Rudolph, *Milwaukee.*
Brewster, Charles Joseph, *Madison.*
Burke, Thomas James, *Winona, Minn.*
Burling, Beverly Burdette, *Madison.*
Burnett, Earle Smead, *River Falls.*
Burton, Amzi Robert, *Green Bay.*
Campbell, Ralph Lloyd, *Stoughton.*
Chladek, Joseph, *Cobb.*
Clark, William Charles, *Cleveland, O.*
Claus, Wesley William, *Mason City, Ia.*
Coon, Jesse Tennison, *Rysuflic, Mo.*
Craigo, Ralph Thurman, *Monroe.*
Cratty, Paul Jones, *Oak Park, Ill.*
Danielson, Olaf, *Waupun.*

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Edmonds, Perry Hugo,	*Lansing, Mich.*
Elliott, George Warren,	*Milwaukee.*
Engh, Peder Blessing,	*Madison.*
Ewald, Almy Phillip,	*Grovertown, Ind.*
Faber, Merle Everitt,	*Mendota, Ill.*
Fernholtz, Henry Joseph,	*Glencoe.*
Ford, Ralph Henry,	*Sparta.*
Foster, Dean Edward,	*Preston, Ia.*
Freeman, William James,	*Horicon.*
Gaare, Ingwald Augustus,	*Minneapolis, Minn.*
Halvorson, Melvin,	*New Richmond.*
Hasbrouck, David Mark,	*Dobbs Ferry, N. Y.*
Hauser, Warren Clifford,	*Evanston, Ill.*
Hauser, Woodling Maurice,	*Evanston, Ill.*
Heller, Harry Leopold,	*Milwaukee.*
Heuriques, Abraham Nunes,	*Kingston, Jamaica.*
Herdegen, Robert Townsend.	*Milwaukee.*
Janachek, Otto John,	*Milwaukee.*
Johnson, George Axel,	*Hudson.*
Knesche, Joseph Albert,	*Ames, Ia.*
Koenig, Herman Henry,	*Milwaukee.*
Leasman, Emil Leo,	*Boscobel.*
Lyford, Walter,	*Plainfield.*
Marquardt, Gustav Adolph,	*Baraboo.*
Mauman, Daniel Louis,	*Milwaukee.*
Maurer, Claude Norman,	*La Crosse.*
Mayer, Adolph Richard,	*Madison.*
McComb, Harvey Godfred,	*Milton.*
McDonald, Cyrus Miles,	*Chicago, Ill.*
McMurtrey, Marvin Lee,	*Richland Center.*
Mead, Warren Judson,	*Plymouth.*
Menzel, John Quincy,	*Ft. Atkinson.*
Middleton, Owen William,	*Berlin.*
Mitchell, Henry Zehring,	*St. Cloud, Minn.*
Murray, Donald John,	*Wausau.*
Nelson, Alfred Mathias,	*Milwaukee.*
Newton, Frank Arthur,	*Sparta.*
Orrison, William Elmer,	*La Farge.*
Peterson, Theodore,	*Manitowoc.*
Reynolds, Ira Lambert,	*Mineral Point.*
Rickeman, Frederick Henry,	*Racine.*

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Rosier, Frank Burdette,	*Rubicon.*
Saridakis, Frank John,	*Milwaukee.*
Schroeder, Fred,	*White Creek.*
Sheerin, Thomas De Sales,	*Indianapolis, Ind.*
Soutter, George Alexander,	*Elgin, Ill.*
Steenson, Burt Edward,	*Whitewater.*
Sweet, Ernest Albert,	*Baraboo.*
Thiele, Otto Victor,	*Milwaukee.*
Thwing, Charles Clark,	*Leavenworth, Kan.*
Tierney, Henry Sarsfield,	*Torrington, Conn.*
Vogedes, John,	*Marathon City.*
Weber, Herman Frederick,	*New York City.*
Whelan, Thomas C.,	*Chippewa Falls.*
Winkler, William Knelland,	*Milwaukee.*
Zilka, John,	*Milwaukee.*

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SUMMER DAIRY SCHOOL.

Aléman, Eugenio,	*Buenos Ayres, Argentine Rep.*
Benn, Ferdinand,	*Medford.*
Binder, Charles William,	*Clintonville.*
Carril, Alberto del	*Buenos Ayres, Argentine Rep.*
Cuesto, Jose,	*Guadalajara, Mexico.*
Finicle, William,	*Lanark, Ill.*
Fleagle, Walter Absolam,	*Baltimore, Md.*
Grewe, Emil A.,	*Cadott.*
Grumann, William,	*Two Rivers.*
Hashimoto, Tokuju,	*Tokio, Japan.*
Kressin, Albert,	*Chippewa Falls,*
Mercer, Alvin L.,	*Antigo.*
Miner, Paul Hildreth,	*Madison.*
Minnich, Phares Smaling,	*Manteno, Ill.*
Pittuck, Buell C.,	*Baton Rogue, La.*
Tsuno, Keitaro,	*Tokio, Japan.*

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SCHOOL OF MUSIC.

Graduates.

Brand, Bessie Goodrich,	*Madison.*
Hansen, Daisy Etta,	*Madison.*
Mills, Nettie,	*Lodi.*
Monroe, Grace,	*Baraboo.*
Montgomery, Janette Louise,	*Madison.*

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Pickford, Theo Beatrice,	*Madison.*
Ransom, Lyla Albina,	*Madison.*
Wagner, Meta,	*Madison.*

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Collegiate.

THIRD YEAR.

Allyn, Horace William,	*Madison.*
Ballantyne, Edith Virtue,	*Bloomington, Ill.*
Blum, Emma Marie,	*Madison.*
Burmeister, Nellie,	*Madison.*
Graves, Edna Lora,	*Brooklyn.*
Hatleberg, Anna Helen,	*De Forest.*
Lang, Stella Mabel,	*Madison.*
Lounsbury, Almyra Belle,	*Madison.*
Lavin, Bessie,	*Madison.*
McLean, Marguerite Louise,	*Menomonie.*
Purcell, Eleanor,	*Madison.*
Smith, Mrs. Gertrude Adelaide,	*Madison.*
Starks, Estelle,	*Madison.*
Stephens, Maud Lunette,	*Fennimore.*
Woock, Grace Genevieve,	*Baraboo.*

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SECOND YEAR.

Abbott, Clarice,	*Madison.*
Baas, Alexius Henry,	*Madison.*
Ballard, Catherine Marie,	*Madison.*
Breitenbach, Mrs. Bertha,	*Madison.*
Bushanan, Iva Luella,	*Rio.*
Buehler, Elizabeth,	*Monroe.*
Carey, Katherine Lee,	*Bloomington.*
Crippin, George Edwin,	*Madison.*
Fadner, Lydia,	*Superior.*
Fairchild, Laura,	*Madison.*
Fisher, Bertha Miriam,	*Madison.*
Forward, Abigail Lois,	*Berlin.*
Freier, Louise,	*Richland Center.*
Grow, Grace Lillian,	*Neillsville.*
Hutton, Annabel McGregor,	*Waukesha.*
Klussman, Josephine,	*Madison.*
Kuntz, Leta,	*Freeport, Ill.*

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Leslie, Donald Eugene,	*Clinton, Ia.*
Lien, Hannah,	*Granite Falls, Minn.*
Maurer, Erna Emma,	*Arcadia.*
McCoy, Florence,	*Madison.*
McKay, Alice Vienna,	*Madison.*
McLean, Marion Clara,	*Monroe.*
Norton, Sara Evelyn,	*Poynette.*
Ottum, Annette Helena,	*McFarland.*
Roach, Clara,	*Waterloo.*
Roden, Mrs. Rose Winterbothom,	*Madison.*
Ross, Maybelle Emeline,	*Belleville.*
Ravn, Agnes,	*Merrill.*
Sanders, Otilda Helena,	*Madison.*
Sears, Mrs. Edna,	*Madison.*
Smith, Lloyd Raymond,	*Milwaukee.*
Stephenson, Willard,	*South Bend, Ind.*
Stocking, Grace Alphretta,	*Madison.*
Teisberg, Julia Severina,	*Stoughton.*
Vail, Stella Bequette,	*Madison.*
Weaver, Paul John,	*Madison.*
Webber, Jessie Myrtle,	*Poynette.*
Wynn, Mrs. Carrie,	*Madison.*
Zumdahl, Susie Dorothy,	*Mount Morris, Ill.*

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FIRST YEAR.

AcMoody, Clayton Everart,	*Madison.*
Adams, Ruth Audrey,	*Sheboygan.*
Aldrich, Loyal Blaine,	*Milwaukee.*
Alford, Hazel Viola,	*Madison.*
Allen, Merwin,	*Allensville.*
Anderson, Vinnie,	*Stoughton.*
Barker, Ernest Franklin,	*Superior.*
Barrett, Lucia Townsend,	*Sheboygan.*
Bergen, Lillian,	*Madison.*
Bevitt, Henriette Jane,	*Madison.*
Bohn, Elsie May,	*Lime Ridge.*
Boynton, Marion,	*Oshkosh.*
Breitenbach, Mabel,	*Madison.*
Breitenfeld, Ella Meta,	*Madison.*
Bryden, Edna Belle,	*Ironton.*
Campbell, Anna Boggs,	*Madison.*

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Chamberlain, Mildred,	*Madison.*
Chatterton, Alta Eudora,	*Madison.*
Churchill, Ethel Elizabeth,	*Monroe.*
Colburn, Willis Paul,	*Cassville.*
Cole, Mrs. Minnie Bruins,	*Madison.*
Coggswell, Caroline Duston,	*Madison.*
Dahl, Eleanor Ingeborg,	*Westby.*
Dixon, Sara,	*Waukesha.*
Douglas, May,	*Madison.*
Dye, Daisy Rumina,	*Madison.*
Elmer, Famee Rebecca,	*Monroe.*
Etter, Inez Martha,	*Monroe.*
Evenson, Mildred Ernestine,	*Sparta.*
Farnum, Isabel Monica,	*Madison.*
Ford, Ralph,	*Madison.*
Fridd, Blanche,	*Valley City, N. D.*
Fritz, Flossie Irene,	*Winslow, Ill.*
Gardner, Laura Evva,	*Chicago, Ill.*
Gardner, Harriet,	*Bloomington, Ill.*
Gilman, Flora Moseley,	*Madison.*
Hanson, Laura,	*Madison.*
Hobbins, Grace,	*Madison.*
Holty, Martin Noel,	*Madison.*
Homberger, Alfred Wilhelm,	*Sauk City.*
Howson, Louis Richard,	*Madison.*
Hurd, Margaret,	*Chippewa Falls.*
Jensen, Mrs. F. M.,	*Stoughton.*
Johnson, Ella Christine,	*Joliet, Ill.*
Johnson, Mrs. Lena,	*Madison.*
Jones, Ida Isabella,	*Plymouth.*
Ketchpaw, Maud Luella,	*Madison.*
Kirby, Ethel Louise,	*Milwaukee.*
Larson, Lewis,	*Whitehall.*
Legler, Alice Louise,	*Madison.*
Leatzow, Vera,	*Madison.*
Lenroot, Katherine Frederica,	*Superior.*
Main, Della,	*Oregon.*
Moore, Ethel Edna,	*Merrilan.*
Morse, Emma Ward,	*Reedsburg.*
Mueller, Erma,	*Two Rivers.*
McClernan, Thomas Joseph,	*Madison.*

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McKichan, Floyd Emile,	*Patch Grove.*
Oren, Arthur Baker,	*Madison.*
Owen, Herman Everett,	*Madison.*
Perkins, Florence Edna,	*Honey Creek.*
Pfund, Anna,	*Madison.*
Ranum, Blanche Hilma,	*La Crosse.*
Ray, George Rankin,	*Waukesha.*
Reed, Mary Rachael,	*Ida Grove, Ia.*
Rott, Richard Alexander,	*Madison.*
Rueth, Anna Petronella,	*Sun Prairie.*
Ruggles, Allen Reed,	*Norwich, N. Y.*
Sanders, Belinda Marie,	*Madison.*
Schwartz, Ray Roland,	*Troy Center.*
Seville, Flavia Olga,	*Lodi.*
Simpson, Verazano Kobloff,	*Chicago, Ill.*
Skinner, Nellie Zell,	*Broadhead.*
Smith, Mrs. Josephine,	*Madison.*
Spensley, Mrs. Florence Bashford,	*Madison.*
Spooner, Fannie Lynn,	*Durand.*
Starks, Lulu May,	*Madison.*
Stewart, Mabel,	*Fargo, N. D.*
Swan, Dicka Severine,	*Deerfield.*
Swenson, Edna Grace,	*Madison.*
Taylor, Bertha May,	*Madison.*
Taylor, Jennie Mabel,	*Madison.*
Theobald, Almina,	*Madison.*
Thorp, Juliet,	*Madison.*
Todd, Ethel Elmore,	*Madison.*
Turneaure, Florence Lillian,	*Madison.*
Van Epps, Mabel,	*Comanche, Ia.*
Wagner, Rose May,	*Menasha.*
Waller, Frank Laird,	*Menomonie.*
Whitcomb, Eva Grace,	*Monroe.*

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SUMMARY OF STUDENTS.

GRADUATE SCHOOL—148.

Fellows and Scholars	39
Other Graduate Students	109

COLLEGE OF LETTERS AND SCIENCE—1476.

Graduate Students	131
Senior Class	240
Junior Class	279
Sophomore Class	318
Freshman Class	395
Special Students	19
Adult Special Students	68
Two Year Pharmacy Students	26

Included in the above are the following:

Course in Commerce—210.

Senior Class	18
Junior Class	30
Sophomore Class	60
Freshman Class	93
Adult Special Students	9

Course in Philosophy—69.

Senior Class	30
Junior Class	39

Course in Pharmacy—33.

Graduate Student		1
Four Years' Course.	Seniors	3
	Freshmen	3
Two Years' Course.	Second Year	12
	First Year	14

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COLLEGE OF ENGINEERING—804.

Graduate Students		10
Senior Class—120.		
Civil Engineering Course		38
Mechanical Engineering Course		28
Electrical Engineering Course		40
General Engineering Course		14
Junior Class—126.		
Civil Engineering Course		36
Mechanical Engineering Course		34
Electrical Engineering Course		49
General Engineering Course		7
Sophomore Class—197.		
Civil Engineering Course		62
Mechanical Engineering Course		42
Electrical Engineering Course		73
General Engineering Course		20
Freshman Class		268
Special Students		29
Adult Special Students		54

COLLEGE OF AGRICULTURE—526.

Graduate Students			7
Long Course..	Seniors	9	
	Juniors	13	
	Sophomores	22	
	Freshmen	28	
	Special Students	5	
	Adult Special Students	3	80
Short Course.	Second Year	124	
	First Year	180	304
Dairy Course			135

COLLEGE OF LAW—183.

Senior Class	53
Middle Class	48
Junior Class	62
Students Electing Law Studies	20

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SCHOOL OF MUSIC—153.

Collegiate.	Graduate Students	8
	Third Year	15
	Second Year	40
	First Year	90

SUMMER SESSION OF 1904.

Letters and Science—

Graduate Students	74
Undergraduates and teachers	226

Apprentices and Artisans—

Graduate Students	6
Undergraduates and teachers	81

Dairy School	16—403
Deduct students now attending the University	132— 271
Total number of students	3413
Twice enumerated 71, leaving as actual number	3342

In the enumeration of special students above, the classification by courses is as follows: Letters and Science, fourth year 2; third year 20; second year 16; first year 49; Civil Engineering, fourth year 1; third year 8; second year 10; Mechanical Engineering, third year 2; second year 10; Electrical Engineering, fourth year 5; third year 8; second year 5; General Engineering, second year 5; first year students in Engineering 29.

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APPENDIX.

BULLETIN OF THE UNIVERSITY OF WISCONSIN.

The Bulletin of the University of Wisconsin is published bimonthly at Madison. For postal purposes, all issues in all series of the Bulletin are included in one consecutive numbering as published, a numbering which has no relation whatsoever to the arrangement in series and volumes.

Under the heading General series are included the annual University catalogue, announcements of the various colleges and courses of the University, etc. The numbers in the General series are of varying size and are not designed to form volumes with title-pages and indexes. To date, the following serial numbers of the Bulletin are issues in the General series, viz., Nos. 24, 27, 29, 34, 35, 37, 44-46, 48, 52, 53, 56-61, 64-77, 80-82, 84-95, 97, 98, 104, 105, 107, 109-111.

The Economics and Political Science series, the History series, the Philology and Literature series, the Science series, and the Engineering series contain original papers by persons connected with the University. The series formerly issued as the Economics, Political Science, and History series was discontinued with the completion of the second volume, and has been replaced by the Economics and Political Science series and the History series.

The Board of Editors of the five above-named series consists of:

WILLIAM H. HOBBS, (Chairman), *Editor of the Science Series.*

RICHARD T. ELY, *Editor of the Economics and Political Science Series.*

VICTOR COFFIN, *Editor of the History Series.*

EDWARD T. OWEN, *Editor of the Philology and Literature Series.*

WILLIAM D. TAYLOR, *Editor of the Engineering Series.*

WALTER M. SMITH, *Secretary.*

The numbers issued to date in these series are as follows:

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A. Economics, Political Science, and History Series.

VOLUME. I.

(Complete in three numbers, with title-page, table of contents, and index.)

No 1. The geographical distribution of the vote of the thirteen states on the Federal Constitution, 1787-8, by Orin Grant Libby. 1894. 8 + 116 p. 2 pl. 75 cents. *Out of print.*

No. 2. The finances of the United States, from 1775 to 1789, with especial reference to the budget, by Charles Jesse Bullock. 1895. 8 + 157 p. 75 cents.

No. 3. The Province of Quebec and the early American revolution. A study in English-American colonial history, by Victor Coffin. 1896. 17 + 288 p. 75 cents.

VOLUME II.

(Complete in four numbers, with title-page, table of contents, and index.)

No. 1. New governments west of the Alleghanies before 1780, by George Henry Alden. 1897. 7 + 74 p. 50 cents.

No. 2. Municipal history and present organization of the city of Chicago, by Samuel Edwin Sparling. 1898. 188 p. 75 cents.

No. 3. Congressional grants of land in aid of railways, by John Bell Sanborn. 1899. 130 p. 50 cents.

No. 4. English common law in the early American colonies, by Paul Samuel Reinsch. 1899. 64 p. 50 cents.

B. Economics and Political Science Series.

VOLUME. I.

No. 1. The decline of landowning farmers in England, by Henry Charles Taylor. 1904. 66 p. 25 cents.

No. 2. History of agriculture in Dane County, Wisconsin, by Benjamin Horace Hibbard. *In preparation.*

C. History Series.

VOLUME. I.

No. 1. The origin of the system of land grants for education, by Joseph Schafer. 1902. 53 p. 35 cents.

No. 2. The king's household in England before the Norman conquest, by Laurence Marcellus Larson. 1904. 157 p. 50 cents.

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D. Philology and Literature Series.

VOLUME. I.

(Complete in four numbers, with title-page, table of contents, and index.)

No. 1. On the development of American literature from 1815 to 1833, by William B. Cairns. 1898. 4 + 87 p. 35 cents.

No. 2. The treatment of nature in the poetry of the Roman Republic, by Katharine Allen. 1899. 131 p. 50 cents.

No. 3. The Great Mother of the gods, by Grant Showerman. 1901. 113 p. 4 pl. 45 cents.

No. 4. Wortlehre des Adjectivs im Altsächsischen, by Edwin Carl Roedder. 1901. 81 p. 35 cents.

VOLUME II.

(Complete in three numbers, with title-page, table of contents, and index.)

No. 1. The time elements of the Orestean trilogy, by Jonathan Bailey Browder. 1902. 76 p. 35 cents. *Out of print.*

No. 2. Schillers Einfluss auf Grillparzer, eine litterarhistorische Studie, by Otto Edward Lessing. 1902. 128 p. 50 cents.

No. 3. The philosophy of Ernest Renan, by Herman Gustav Adolph Brauer. 1903. 175 p. 50 cents.

VOLUME III.

No. 1. Das Sprichwort bei Hans Sachs: Teil 1, Verzeichnis der Sprichwörter, by Charles Hart Handschin. 1904. 153 p. 50 cents.

No. 2. The Graecostasis of the Roman Forum and its vicinity, by Charles James O'Connor. 1904. 49 p. 25 cents.

E. Science Series.

VOLUME. I.

(Complete in five numbers, with title-page, table of contents, and index.)

No. 1. On the speed of the liberation of iodine in mixed solutions of potassium chlorate, potassium iodide, and hydrochloric acid, by Herman Schlundt. 1894. 33 p. 35 cents.

No. 2. On the quartz keratophyre and associated rocks of the

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north range of the Baraboo Bluffs, by Samuel Weidman. 1895. 22 p. 3 pl. 25 cents.

No. 3. Studies in spherical and practical astronomy, by George Cary Comstock. 1895. 51 p. 40 cents.

No. 4. A contribution to the mineralogy of Wisconsin, by William Herbert Hobbs. 1895. 48 p. 5 pl. 40 cents.

No. 5. Analytic keys to the genera and species of North American mosses, by Charles Reid Barnes and Frederick De-Forest Heald. 1896. 10 + 212 p. $1.00.

VOLUME II.

(Complete in six numbers, with title-page, table of contents, and index.)

No. 1. The action of solutions on the sense of taste, by Louis Kahlenberg. 1898. 31 p. 35 cents.

No. 2. Aspects of mental economy, by M. Vincent O'Shea. 1900. 166 p. 2 pl. 75 cents. *Out of print.*

No. 3. Contributions from the Anatomical Laboratory of the University of Wisconsin, by William Snow Miller. 1900. 48 p. 13 pl. 40 cents.

No. 4. The anomalous dispersion of cyanin, by Carl Edward Magnusson. 1900. 50 p. 7 pl. 30 cents.

No. 5. The theory of electrolytic dissociation, as viewed in the light of facts recently ascertained, by Louis Kahlenberg, with the coöperation of Arthur Alexander Koch and Roy Dykes Hall. 1901. 55 p. 40 cents.

No. 6. On the dielectric constants of pure solvents, by Herman Schlundt. 1901. 37 p. 25 cents.

VOLUME III.

No. 1. On the sensitiveness of the coherer, by Edson Ray Wolcott. 1901. 20 p. 20 cents.

No. 2. From the borderland between crystallography and chemistry, by Victor Goldschmidt. 1904. 18 p. 25 cents.

No. 3. Anatomy in America, by Charles Russell Bardeen. *In preparation.*

No. 4. A contribution to the chemistry of the tellurates, by Edgar Burton Hutchins, Jr. *In preparation.*

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F. Engineering Series.

VOLUME. I.

(Complete in ten numbers, with title-page, table of contents, and index.)

No. 1. Track, by Leonor Fresnel Loree. 1894. 24 p. 25 cents. *Out of print.*

No. 2. Some practical hints in dynamo design, by Gilbert Wilkes. 1894. 16 p. 25 cents. *Out of print.*

No. 3. The steel construction of buildings, by Corydon Tyler Purdy. 1894. 27 p. 25 cents. *Out of print.*

No. 4. The evolution of a switchboard, by Arthur Vaughan Abbott. 1894. 32 p. 4 pl. 35 cents. *Out of print.*

No. 5. An experimental study of field methods which will insure to stadia measurements greatly increased accuracy, by Leonard Sewell Smith. 1895. 45 p. 1 pl. 35 cents. *Out of print.*

No. 6. Railway signaling, by William McCollough Grafton. 1895. 38 p. 35 cents.

No. 7. Emergencies in railroad work, by Leonor Fresnel Loree. 1895. 42 p. 35 cents.

No. 8. Electrical engineering in modern central stations, by Louis Aloysius Ferguson. 1896. 33 p. 35 cents.

No. 9. The problem of economical heat, light, and power supply for building blocks, school houses, dwellings, etc., by Gerdt Adolph Gerdtzen. 1896. 69 p. 45 cents.

No. 10. Topographical surveys, their methods and value, by John Lane Van Ornum. 1896. 39 p. 35 cents.

VOLUME II.

(Complete in ten numbers, with title-page, table of contents, and index.)

No. 1. A complete test of modern American transformers of moderate capacities, by Arthur Hillyer Ford. 1896. 88 p. 35 cents.

No. 2. A comparative test of steam injectors, by George Henry Trautmann. 1897. 34 p. 25 cents.

No. 3. The superintendent of bridges and buildings, by Onward Bates. 1898. 30 p. 25 cents.

No. 4. Some unrecognized functions of our state universities, by John Butler Johnson. 1899. 20 p. 25 cents. *Out of print.*

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No. 5. The transcontinental triangulation along the thirty-ninth parallel, by John Fillmore Hayford. 1900. 22 p. 6 pl. 25 cents.

No. 6. The chemical engineer, by Magnus Swenson. 1900. 13 p. 25 cents.

No. 7. Recently improved methods of sewage disposal, by John Butler Johnson. 1900. 19 p. 25 cents.

No. 8. An experimental study of the corrosion of iron under different conditions, by Carl Hambuechen. 1900. 47 p. 19 pl. 30 cents.

No. 9. The progress of the ceramic industry, by Edward Orton, Jr. 1903. 23 p. 25 cents.

No. 10. The effect of frequency on the steadiness of light emitted from an incandescent lamp, by Harold Seaman. 1904. 47 p. 25 cents.

VOLUME III.

No. 1. An investigation of rotations produced by current from a single-phase alternator, by Arthur Curtis Scott. 1904. 162 p. 50 cents.

No. 2. The sources of water supply in Wisconsin, by William Gray Kirchoffer. *In preparation.*

Persons who reside in the state of Wisconsin may obtain copies of the Bulletin free by applying to the Secretary of the Regents and paying the cost of transportation. Certain numbers, as indicated in the preceding list, are out of print and can no longer be furnished. Bulletins issued since May 1, 1898, are entered as second-class mail matter and no charge is required by the University to cover cost of postage. The postage required for such of the earlier numbers as can now be furnished is as follows: Econ. ser., Vol. 1, No. 2, 8c; No. 3, 13c; Vol. 2, No. 1, 4c; Phil. ser., Vol. 1, No. 1, 5c; Sci. ser., Vol. 1, No. 1, 2c; No. 2, 2c; No. 3, 3c; No. 4, 3c; No. 5, 10c; Vol. 2, No. 1, 2c; Eng. ser., Vol. 1, No. 6, 2c; No. 7, 3c; No. 8, 2c; No. 9, 4c; No. 10. 3c; Vol. 2. No. 1, 4c; No. 2, 2c.

Any number of the Bulletin now in print will be sent postpaid to non-residents from the office of the Secretary of the Regents on receipt of the price given in the list printed above. Title-pages, tables of contents, and indexes to completed volumes will be furnished without cost on application to the University Librarian. Communications having reference to an exchange of publications should be addressed to the Librarian of the University of Wisconsin, Madison, Wis.

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PUBLICATIONS OF THE WASHBURN OBSERVATORY.

From the Washburn Observatory have been issued the publications of the Washburn Observatory, Vols. 1-11 (1882-1902). Correspondence regarding these publications should be addressed to the Director of the Washburn Observatory, Madison, Wis.

PUBLICATIONS OF THE AGRICULTURAL EXPERIMENT STATION.

The Agricultural Experiment Station has issued Annual Reports, Nos. 1-21 (1883-1904), and Bulletins, Nos. 1-118 (1883-1905). Many of these publications are now out of print, but such annual reports and bulletins as are now available are sent free to all residents of the state upon request. A list of issues to date of the bulletins may be obtained from the Director of the Agricultural Experiment Station, Madison, Wisconsin, to whom all correspondence regarding these publications should be addressed.

BULLETIN OF THE WISCONSIN FARMERS' INSTITUTES.

From the office of Farmers' Institutes has been issued the Wisconsin Farmers' Institutes Bulletin, Nos. 1-18 (1887-1904). Correspondence regarding this publication should be addressed to the Superintendent of Agricultural Institutes, Madison, Wisconsin.

PH. D. THESES OF THE UNIVERSITY OF WISCONSIN.

(List of theses printed since the publication of the Catalogue for 1903-04.)

Breslich, Arthur Louis, Ph. D., 1904.
The strophic structure of Isaiah 52: 13-53. 19 p. Madison, 1904.

Frost, William Dodge, Ph. D., 1903.
The antagonism exhibited by certain bacteria against the bacillus typhosus gaffky. Reprinted from the Journal of Infectious Diseases, Vol. 11, p. 597-641. Chicago, 1904.

Handschin, Charles Hart, Ph. D., 1902.
Das Sprichwort bei Hans Sachs: Teil 1, Verzeichnis der Sprichwörter. Reprinted from the Bulletin of the University of Wisconsin, Philology and Literature series, Vol. 3, p. 1-153. Madison, 1904.

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Kellogg, Louise Phelps, Ph. D., 1901.
The American colonial charter. Reprinted from the Annual Report of the American Historical Association for the year 1903, Vol. 1, p. 185-341. Washington, 1904.

Larson, Laurence Marcellus, Ph. D., 1902.
The king's household in England before the Norman conquest. Reprinted from the Bulletin of the University of Wisconsin, History series, Vol. 1, p. 55-211. Madison, 1904.

Leith, Charles Kenneth, Ph. D., 1901.
Rock cleavage. Reprint of Bulletin No. 239 of the United States Geological Survey. 216 p. 27 pl. Washington, 1905.

O'Connor, Charles James, Ph. D., 1904.
The Graecostasis of the Roman Forum and its vicinity. Reprinted from the Bulletin of the University of Wisconsin, Philology and Literature series, Vol. 3, p. 155-203 Madison, 1904.

Pengra, Charlotte Elvira, Ph. D., 1901.
On the conformal representation of plane curves, particularly for the cases $p = 4$, 5, and 6. Reprinted from the Transactions of the Wisconsin Academy of Sciences, Arts, and Letters, Vol. 14, p. 655-669. Madison, 1904.

Quaintance, Hadley Winfield, Ph. D., 1904.
The influence of farm machinery on production and labor. Reprinted from the Publications of the American Economic Association, third series, Vol. 5, p. 791-904. Ithaca, 1904.

Schreiner, Oswald, Ph. D., 1902.
The sesquiterpenes. Reprinted from the Pharmaceutical Archives, Vol. 6, p. 24, 33, 56, 65, 81, 107, 116; and from the Pharmaceutical Review, Vol. 22, p. 60, 101, 131. Madison, 1904.

Scott, Arthur Curtis, Ph. D., 1902.
An investigation of rotations produced by current from a single-phase alternator. Reprinted from the Bulletin of the University of Wisconsin, Engineering series, Vol. 3, p. 1-162. Madison, 1904.

Taylor, Henry Charles, Ph. D., 1902.
The decline of landowning farmers in England. Reprinted from the Bulletin of the University of Wisconsin, Economics and Political Science series, Vol. 1, p. 1-66. Madison, 1904.

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Woll, Fritz Wilhelm, Ph. D., 1904.
On the relation of food to the production of milk and butter fat by dairy cows. Reprint of Bulletin No. 116 of the Agricultural Experiment Station of the University of Wisconsin. 85 p. Madison, 1904.

Young, Allyn Abbott, Ph. D., 1902.
A discussion of age statistics. Reprint of Bulletin 13 of the Bureau of the Census. 53 p. Washington, 1904.

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